REQUEST FOR PROPOSALS

RFP No. 2324-Bonds10

FOR

CONSTRUCTION MANAGEMENT SERVICES FOR
HVAC AND ROOFING UPGRADES

Deadline: 2:00:00 p.m., Tuesday, March 12, 2024

Alum Rock Union Elementary School District
2930 Gay Avenue
San Jose, CA 95127
http://www.arusd.com

For Information Contact:

Marc Freitas
Director of Facilities, Bonds, and Leases
2930 Gay Avenue
San Jose, CA 95127
408-928-6847
marc.freitas@arusd.org

REQUEST FOR PROPOSALS
FOR CONSTRUCTION MANAGEMENT SERVICES FOR
HVAC and Roofing Upgrades
RFP #2324-Bonds10

NOTICE IS HEREBY GIVEN that the Alum Rock Union School District ("District") is requesting qualified persons, firms, partnerships, corporations, associations, or professional organizations to provide comprehensive and professional construction management services to the District for HVAC Upgrade Projects ("Project," "Projects" or "Project(s)") relating to the District's facilities development of its public schools under Measure "I" Bonds Program ("Program"), this will include work at the District Office IT Server Room, Superintendent's Office and District Main Lobby Receptionist Area. The comprehensive construction management services will include, but not limited to: Project construction oversight, reporting, and support; and constructability reviews; pre-construction support including bidding; strategic construction sequencing and staging; optimization of staging and/or work consolidation; and may include other construction management for Projects and Program planning and support.

Please submit one (1) PDF of the technical proposal. Corresponding pricing proposal shall be submitted as a separate document. Although price is very important, other factors will be taken into consideration.

Email Proposals to:
Mr. Marc Freitas
Director of Facilities, Bonds, and Leases
marc.freitas@arusd.org

A mandatory pre-bid conference and site walk will be held at 2:00 p.m. on Thursday, February 22, 2024 at the District Office, 2930 Gay Avenue, San Jose, CA 95127. All participants are required to sign in.

For questions concerning the anticipated work or scope of the project, please **contact Mr. Marc Freitas, Director of Facilities, Bonds, and Leases** via email at marc.freitas@arusd.org or designee, no later than **Wednesday, February 28, 2024**. Answers to questions will not be provided verbally. Rather, answers to all questions or any addenda will be in writing and responded to via email. The proposal needs to include a project schedule and staff allocations. Please provide a detailed fee for services including labor hours and allocated personnel.

ALL RESPONSE "Proposal for Construction Management Services for HVAC and Roofing Upgrades**" ARE DUE BY 2:00 P.M., Tuesday, March 12,2024** and clearly marked RFP No. 2324-Bonds10.

All proposals received as part of this solicitation become the property of the District and shall be considered public record. RFP must conform and be responsive to the requirements set forth in this RFP.

Questions must be submitted to Mr. Freitas at marc.freitas@arusd.org or designee, **on or before Wednesday, February 28, 2024 at 2:00 P.M. Answers will be emailed on Wednesday, March 6, 2024 to all potential bidders that signed in at the scheduled site walk.**

The District reserves the right to reject any and all proposals and to waive informalities and minor irregularities in any proposal reviewed. The District may reject any proposal that does not conform to the instructions herewith. Additionally, the District reserves the right to negotiate all final terms and conditions of any preliminary agreement entered into with the construction management firm. The District makes no representations that any contract will be awarded to any respondent.

Contact with any individual(s) in the District, other than the individual(s) specifically named herein, is prohibited, and may result in rejection of the proposal.

I. INTRODUCTION

The Alum Rock Union Elementary School District is a suburban school district serving about 7,400 students from Transitional Kindergarten through grade eight. The District has thirteen (13) elementary schools, five (5) middle schools, and four (4) K-8 schools.

All the Projects identified will be funded from the Measure I Bonds.

A. LIMITATIONS

The District reserves the right to contract with any entity responding to this RFP. The District makes no representation that participation in the RFP process will lead to an award of contract or any consideration whatsoever. The District shall in no event be responsible for the cost of preparing a response to this RFP. The awarding of the construction management services contract(s), if at all, is at the sole discretion of the District.

The District reserves the right to reject any or all RFPs, to waive any irregularities or informalities not affected by law, to evaluate each RFP submitted, and to award a contract, if any, according to the RFP which best serves the interest of the District at a reasonable cost to the District. Further, the District reserves the right to reject any and all RFPs and to negotiate contract terms with one or more respondent firms for one or more of the work items.

B. FULL OPPORTUNITY

The District hereby affirmatively ensures that Disadvantaged Business Enterprises ("DBE"), Small Local Business Enterprises ("SLBE"), Small Emerging Local Business Enterprises ("SELBE"), Disabled Veterans Business Enterprises ("DVBE"), and minority business enterprises shall be afforded full opportunity to submit SOQs in response to this RFP and no qualified person will be discriminated against on the basis of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or veteran or military status in any consideration leading to the award of the contract.

C. RESTRICTIONS ON LOBBYING AND CONTACTS

From the period beginning on the date of the issuance of this RFP and ending on the date of the award of the contract, no person, or entity responding to this RFP, nor any officer, employee, representative, agent, or consultant representing such a person or entity shall contact through any means or engage in any discussion regarding this RFP, the evaluation or selection process/or the award of the contract(s) with any member of the District's Board of Education ("Board"), selection committee members, or any member of the Citizens' Oversight Committee, or with any employee of the District except for clarifications and questions as described herein. Any such contact shall be grounds for the disqualification of the construction management services entity submitting an RFP.

II. SCOPE OF REQUIRED SERVICES

Although the full scope of work shall be negotiated in the Professional Services Agreement, the Construction Manager will be expected to be capable of fulfilling, at a minimum, the following:

A. PROJECT OVERSIGHT

1. Coordinate and consult with District's Facilities, Bonds, & Leases Director, the District's consulting team, the District's design team, and the Project Inspector to develop, plan, coordinate, organize, and manage the Project.

2. Monitor and advise the District as to all material developments in the Project.

3. Develop and maintain a master schedule for the Project, which identifies critical path milestones. Facilitate pull planning sessions as needed.

4. Provide construction cost estimating.

5. Develop and maintain a master budget for the Project.

6. Be the focal point for all communications to and from the construction contractor(s).

7. Perform constructability reviews, determine construction feasibility, availability of materials and labor, time requirements for installation and construction, and factors relating to cost.

8. Provide and maintain management presence on the Project site(s).

9. Monitor, manage, and report on requirements established by the District's SWPPP consultant.

10. Attend and report at Community Meetings as required.

11. Attend School Board meetings if required.

B. PROJECT REPORTING

1. Maintain reporting systems for the project, including without limitation, for the scope, sequencing, scheduling, budgets, and communication.

2. Maintain weekly and monthly progress reports, including progress photos.

3. Maintain accurate project cost accounting records.

4. Prepare and implement methods to budget and track all expenditures on the project and generate reports to the District and maintain District's financial reporting systems as they relate to the project. Accountability experience preferable.

5. Prepare and implement methods to track and report schedule status for the Project.

6. Prepare project accounting reports as required for quarterly Citizens Oversight Committee.

7. Monitor, track, and certify all costs associated with changes in the work.

8. Ensure DIR reporting requirements are followed.

C. PROJECT SUPPORT

1. Attend and provide updates at District Board meetings, and prepare various weekly and monthly reports, background materials, preliminary materials, and all other District-required materials for Board meetings.

2. Assist the District, as applicable, in pre-qualifying bidders if prequalification is permitted or required by the District; generating and increasing interest among qualified bidders; advertising to solicit bids for the Project; coordinating delivery of the bid documents to the bidders; and reviewing submitted bids. Perform outreach efforts to increase contractor response.

3. Organize and maintain all records, correspondence, contracts, research analysis, and all other material related to the design, bidding, and construction.

4. Track and maintain logs of submittals, RFI's, construction change documents, change order requests, and approved change orders.

5. Certify and track monthly progress payments and final closeout of project cost.

D. OTHER PROJECT ESTIMATING

1. Provide estimating services in connection with other projects that are provided by the District or Program Manager.

Appendix "A" is a copy of the District's Professional Services Agreement for Construction Management Services and exhibits thereto ("Agreement"), describing the Project scope in greater detail as well as detailing legal terms. **Note:** The successful respondent will be expected to execute the Agreement. Any requested changes to the Agreement must be submitted with the RFP and may be a material term in selection of the successful respondent.

D. FEES

This RFP is a request for specific proposals related to Construction Management services for the **ALUM ROCK UNION SCHOOL DISTRICT PROJECTS** listed in **EXHIBIT A**. Specific proposals for Construction Management Services for the District Projects shall be in accordance with **CONSTRUCTION MANAGEMENT PROJECT ASSUMPTIONS** summarized in **EXHIBIT B and previously submitted RFQ**. In addition, the District requires each respondent to provide a general fee schedule for the types of service that you offer based on previously provided fees and information. Be thorough and specific as this will form the basis of contracts for services that may be presented by the District. If referencing general condition costs, include typical staffing expectations, professional fee schedules, and a discussion of the total expected costs that the District could expect for specific projects.

- Provide detailed information on your billing practices (i.e. lump sum, other), including reimbursable cost categories and hourly billing rates by position for additional services.

- Provide detailed information on your firm's practices concerning discounted fees if selected as Construction Manager.

- Provide your firm's flat fee (if proposed) for the Project; hourly billing rates by position for additional services (proposed); staffing plan (proposed); and reimbursable schedule (proposed). Include your firm's discounted flat fee (proposed), if any for the Project(s).

- Provide a staffing plan. Please indicate the level of effort (Full Time Equivalent) for each proposed Project position and a reimbursable schedule that depicts only those expenditures that are exclusive to, and in support of, the Project as described in the proposed work plan.

- Included within the fee proposal should be the identification of proposed reimbursable expenses by category (i.e. offices, computers and peripherals, printers, fax machines, photocopy equipment, other as identified by proposing entity). No reimbursement for long-distance travel expense shall be included. All reimbursable expenses will require receipts to be provided to the District.

E. SUBMISSION GUIDELINES

Each RFP must conform and be responsive to the requirements set forth

The District reserves the right to waive any informalities or irregularities in received Submittals. Further, the District reserves the right to reject any and all RFP and to negotiate contract terms with one or more respondent firms for one or more of the work items.

RFP RESPONSE SCHEDULE SUMMARY:

The District reserves the right to change the dates on the schedule without prior notice.

DATE	**EVENT**	**TIME DEADLINE**
February 16, 2024	**Release of RFP #2324-Bonds10**	5:00:00 p.m.
February 22, 2024	Mandatory pre-bid conference and site walk	2:00:00 p.m.
February 28, 2024	Deadline for submission of written questions to District concerning RFP #2324-Bonds10	2:00:00 p.m.
March 12, 2024	**Deadline for all submissions in response to RFP #2324-Bonds10**	**2:00:00 p.m.**
April 04, 2024	Notification to selected Firms	

WE THANK YOU FOR YOUR INTEREST IN THESE EXCITING PROJECTS!

EXHIBIT A

ALUM ROCK UNION SCHOOL DISTRICT PROJECT DESCRIPTIONS

Server Room – Construction Management services for the replacement of HVAC equipment and fire system upgrades to the districts IT Server Room Project. Work expected to begin early summer of 2024 with completion in late summer of 2024.

Superintendent & Reception – Construction Management services for the replacement and modifications to the HVAC system and fire system upgrades for the office of the Superintendent, Reception area and associated rooms and spaces. Work anticipated to begin early summer of 2024 and completed by the end of summer 2024.

Roof – Construction Management services for the replacement and modifications to the existing roof on building 100 of the District Office campus. Work is expected to begin in early summer 2024 and completed by the end of summer 2024.

EXHIBIT B

CONSTRUCTION MANAGEMENT PROJECT ASSUMPTIIONS

1. **PRE-CONSTRUCTION STAFFING**
    a. **All projects, staffing appropriate to provide all services as required in the RFP.**
        i. Initiate services prior to construction. Provide services from local firm office.
        ii. Pre-Construction coordination with District and Program Managers at each site.
            1. CMs to reconcile, coordinate, confirm estimates, VE items, and constructability comments.
            2. Provide independent review of project documents in preparation for construction.
        iii. Project startup, GMP determination support services including assisting the District in analyzing subcontractor bids and developing final GMP for District approval.

2. **CONSTRUCTION PHASE STAFFING**
    a. **Alum Rock Union School District Projects**
        i. Anticipate full time staffing for projects.

Appendix A

AGREEMENT FOR CONSTRUCTION MANAGEMENT SERVICES

ALUM ROCK UNION SCHOOL DISTRICT

WITH

_____

FOR

_____ PROJECT

_____, 2024

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AGREEMENT FOR CONSTRUCTION MANAGEMENT SERVICES

This Agreement for Construction Management Services ("Agreement") is made as of _____, 202_, between the Alum Rock Union School District, a California public school district ("District"), and _____ ("CM") (both collectively "Parties"), for the following project ("Project"):

The construction administration of _____ Project.

See **Exhibit A** for detailed Project scope.

For and in consideration of the mutual covenants herein contained, the Parties hereto agree as follows:

ARTICLE 1. Definitions

1.1 In addition to the definitions above, the following definitions for words or phrases shall apply when used in this Agreement, including all Exhibits:

1.1.1 **Agreement:** The Agreement consists exclusively of this document and all identified exhibits attached and incorporated by reference.

1.1.2 **Architect:** The architect(s) that District designates as being the architect(s) for all or a portion of the Project, including all consultants to the Architect(s).

1.1.3 **As-Built Drawings ("As-Builts"):** Any document prepared and submitted by District Contractor that details on a Conforming Set, the actual construction performed during the Project, including changes necessitated by Construction Change Documents and change orders, and detailed by District's construction Contractor on a Conforming Set.

1.1.4 **Board:** District's Governing Board.

1.1.5 **Conforming Set:** The plans, drawings, and specifications at the end of the Bidding Phase that incorporate all addenda, if any, issued during the Bidding Phase.

1.1.6 **Construction Budget:** The total amount indicated by District for the Project plus all other costs, including design, construction, administration, financing, and all other costs.

1.1.7 **Construction Change Documents ("CCD"):** The documentation of changes to the DSA-approved construction documents.

1.1.8 **Construction Cost Budget:** The total cost to District of all elements of a Project designed or specified by the Architect, as adjusted during and at the end of the design phase in accordance with this Agreement and the

Agreement for Architectural Services. The Construction Cost Budget does not include the compensation of the Project Design Team, the Program Manager, CM and any subconsultants, the cost of the land, rights-of-way, or financing which are the responsibility of District.

1.1.9 **Construction Manager:** The entity listed in the first paragraph of this Agreement.

1.1.10 **Consultant(s):** Any and all consultant(s), sub-consultant(s), subcontractor(s), or agent(s) to CM.

1.1.11 **Contractor:** One or more licensed and registered contractors under contract with District for construction of all or a portion of the Project.

1.1.12 **Design Team:** The Architect(s) that District designates as being the architect(s) for all or a portion of the Project, including all consultants to the Architect(s), plus all engineer(s) or other designer(s), who have a responsibility to District to design all or a portion of the Project either directly or as a subconsultant or subcontractor. The term Design Team includes the Design Professional in General Responsible Charge on this Project.

1.1.13 **DIR:** California Department of Industrial Relations.

1.1.14 **District:** The Alum Rock Union School District.

1.1.15 **District's Representative:** The individual identified herein that is authorized to act on District's behalf with respect to the Project. The initial District's Representative shall be **Kolvira Chheng, Assistant Superintendent of Business Services**. District may change District's Representative by notice as set forth herein.

1.1.16 **DSA:** Division of the State Architect in the California Department of General Services.

1.1.17 **Extra Services:** District-authorized Services outside of the scope in **Exhibit A** or District-authorized reimbursables not included in CM's fee.

1.1.18 **Fee:** CM's Fee is defined in Article 7 and payable as set forth in **Exhibit D**.

1.1.19 **Program:** The District's Measures J and I Bonds Program.

1.1.20 **Project(s):** The projects identified in the District's Bond Measure I Program.

1.1.21 **Program Manager:** Any program manager hired to perform program management services for District, including all Consultant(s) to the Program Manager.

1.1.22 **Project Inspector, Inspector of Record, IOR:** The agent of the DSA at the project site whose primary responsibility will be to insure that the project is constructed in compliance with current codes; DSA-approved plans and specifications relating to fire life safety, structure, and accessibility; and quality controls required of a public works facility. The IOR will report to both the DSA and the Architect.

1.1.23 **Record Drawings:** A final set of drawings prepared by the Architect incorporating all changes from all As-Builts, sketches, details, and clarifications.

1.1.24 **Service(s):** All labor, materials, supervision, services, tasks, and work that CM is required to perform and that are required by, or reasonably inferred from, the Agreement, and that are necessary for the design and completion of the Project.

ARTICLE 2. Term

2.1 **Term:** Refer to Article 5

ARTICLE 3. Scope, Responsibilities and Services of CM

3.1 **Scope:** CM shall provide the Services described herein and under **Exhibit A** for the Project.

3.2 **Standard of Care:** CM, its officers, agents, employees, subcontractors, Consultants and any persons or entities for whom CM is responsible, shall provide all Services pursuant to this Agreement in accordance with the requirements of this Agreement and in a manner consistent with the standard of care under California law applicable to those who specialize in providing the same services for projects of the type, scope, and complexity of the Project. District's review, approval of, or payment for any of the Services required under this Agreement shall not be construed as assent that CM has complied, nor in any way relieve CM of compliance, with (i) the applicable standard of care, or (ii) applicable statutes, regulations, rules, guidelines and requirements.

3.3 **Coordination:** In the performance of CM's services under this Agreement, CM agrees that it will maintain coordination with District-designated representatives as may be requested and desirable. This shall include, without limitation, coordination with all members of District's Design Team, the Project Inspector, and the Program Manager.

3.4 **Other Consultants:** If CM employs sub-consultant(s), CM shall ensure that its contract(s) with its sub-consultant(s) include language incorporating the terms of this Agreement.

3.5 **CM's as District Representative:** CM will act as District's agent to render the Services and furnish the work as described in **Exhibit A**, commencing with the receipt of a written Notice to Proceed signed

by District Representative. CM's services will be completed in accordance with the schedule attached as **Exhibit C**. During the Project's Construction Phase, District may require that the Contractors submit all notices and communication relating to the Project directly to CM.

3.6 **Review of District's Facilities Master Plan:** CM will review District's Facilities Master Plan for District and other written materials District makes available by District to CM to understand fully the nature, extent and intent of the Facilities Plan and the Project.

3.7 **Review of Measures J and I:** CM will review Measures J and I and other written materials made available by District to CM that relate to Measures J and I to fully understand the extent of funding available to implement District's Master Facilities Plan for District, the anticipated schedule for issuance of Bonds under Measures J and I relative to the anticipated design, bidding and construction of projects.

3.8 **Expansion of Work based on Additional Funds:** Should the Board decide to expand the scope of the Program and/or supplement the Construction Budget based upon availability of additional funds, CM agrees to perform the additional scope of work under the fee and cost terms of this Agreement.

3.9 **Conflicts of Interest Prohibited:**

3.9.1 CM understands that District officials and employees are prohibited from involvement in decisions in which they may have a financial interest pursuant to Government Code sections 1090 and 87100 et seq., and certifies that it does not know of any facts indicating that any District official or employee has an ownership or other financial interest, direct or indirect, in this Agreement. Further, CM hereby certifies that no current District official or employee of District, and no one who has been a District official or employee of District within the past two years has participated in bidding, selling or promoting this Agreement. CM understands that in addition to the remedies available at law, that any failure to provide an accurate certification or any violation of this provision shall make the Agreement voidable by District.

3.9.2 CM shall not be permitted to submit proposals or otherwise seek contracts for the following services to be procured by District in connection with any project covered by this Agreement: Design Professional, IORs or Test/Inspection. If CM identifies potential Design Professionals, Project Inspectors or Test/Inspection services in connection with a project, CM shall affirmatively and unequivocally represent and warrant to District that neither CM nor any person who holds equity interest in CM's organization is a former or current holder

of any equity interest in the firm identified or has any financial interest in the firm identified. District reserves the sole discretion to waive this subsection's requirements on a case-by-case basis.

ARTICLE 4. CM Staff

4.1 District selected CM to perform the Services because of CM's skills and expertise of key personnel.

4.2 CM agrees that the following key personnel in CM's firm shall be associated with the Project and perform the Services in the following capacities:

Principal In Charge: _____

Project Director: _____

Construction Manager: _____

Project Manager: _____

Sr. Project Manager: _____

Estimator: _____

Assistant Construction Manager: _____

Assistant Project Manager: _____

Scheduler: _____

Other: _____

4.3 CM shall not change any of the key personnel listed above without District's prior written approval, unless said personnel cease to be employed by CM. Regardless of the reason for the change in key personnel, District shall be allowed to interview and retains the right to approve replacement personnel.

4.4 If any designated lead or key person fails to perform to the satisfaction of District, then upon District's written notice, CM will have seven (7) calendar days to remove that person from the Project and shall provide a replacement person acceptable to District.

4.4.1 All lead or key personnel for any Consultant must also be designated by the Consultant and are subject to all conditions stated in this Agreement.

4.5 CM represents that CM has no existing interest and will not acquire any interest, direct or indirect, that could conflict in any manner or degree with the performance of Services required under this Agreement. CM agrees further that no person having any such interest shall be employed by CM.

ARTICLE 5. Schedule of Work

CM shall commence work under this Agreement upon receipt of a Notice to Proceed and shall prosecute the work diligently as described in **Exhibit A** so as to proceed with and complete the Services in compliance with the schedule attached as **Exhibit C.** Time is of the essence and failure of CM to perform work on time as specified in this Agreement is a material breach of this Agreement.

ARTICLE 6. Construction Cost Budget

6.1 CM shall have responsibility, along with the Architect, to develop, review, and reconcile the Construction Cost Budget per Project with the Architect and District throughout the design process and construction.

6.2 The Construction Cost Budget shall be the total cost to District of all Project elements the Design Team designs or specifies.

6.3 CM shall work cooperatively with the Project Design Team throughout the Project, including but not limited to, the Schematic Design Phase, Design Development Phase, and Construction Documents Phase, as described in **Exhibit A**, so that the Project's construction cost as designed by the Project Design Team will not exceed the Construction Cost Budget, as may be adjusted subsequently with District's written approval. CM shall notify District if it believes the Project's construction cost of the work by the Project Design Team will exceed the Construction Cost Budget, and/or if it believes the construction cost as designed will exceed the Construction Cost Budget. CM, however, shall not perform or be responsible for any design or architectural services.

6.4 Evaluations of District's Construction Budget, and CM's preliminary and detailed cost estimates, represent CM's best judgment as a professional familiar with the construction industry.

6.5 If the Bidding Phase has not commenced within ninety (90) days after DSA approval of the plans and specifications, the Construction Cost Budget may be adjusted at District's request to reflect changes in the general level of prices in the construction industry between the date of submission of the Construction Documents to District and the date on which proposals are sought.

6.6 District may, in its sole discretion, do one, or a combination, of the following if any of the events in Article 6.7 occur:

6.6.1 Instruct Design Team to revise the drawings and specifications (in scope and quality as approved by District) to bring the Project within the Construction Cost Budget for re-bidding. CM will perform cost estimation, value engineering, constructability reviews, and/or bidding support at no additional cost to District.

6.6.2 Authorize CM to re-negotiate and/or re-bid the Project, when appropriate, within three (3) months' time of

receipt of bids, at no additional cost to District (exclusive of District and other agencies' review time).

6.6.3 Give CM written approval of an agreed adjustment to the Construction Cost Budget.

6.6.4 Terminate this Agreement if the Project is abandoned by District without further obligation by either party.

6.7 If any of the following events occur, District may exercise any one, or any combination, of the actions set forth in Article 6.6 above:

6.7.1 The lowest responsive base bid received is five percent (5%) or more in excess of the Construction Cost Budget or

6.7.2 The combined total of base bid and all additive alternates equal or exceed ten percent (10%) of the Construction Cost Budget; or

6.7.3 The Construction Cost Budget increases in phases subsequent to the Schematic Design Phase due to reasonably foreseeable changes in the condition of the construction market in Bay Area, in so far as these have not been caused by Acts of God, earthquakes, strikes, war, or energy shortages due to uncontrollable events in the world economy.

ARTICLE 7. Fee and Method of Payment for Basic Services

7.1 District shall pay CM an amount not to exceed _____ Dollars ($_____) for all services contracted for under this Agreement and based on the Fee Schedule set forth in **Exhibit D**.

7.2 District shall pay CM the Fee pursuant to the provisions herein and the method of payment set forth in **Exhibit D**.

7.3 CM shall bill its work under this Agreement on a percent of completion basis in accordance with **Exhibit D**.

7.4 No increase in fee will be due from change orders generated during the construction period to the extent caused by CM's error(s) or omission(s).

7.5 CM's fee set forth in this Agreement shall be full compensation for all of CM's Services incurred in the performance hereof as indicated in **Exhibit D**, including, without limitation, all costs for personnel, travel within two hundred (200) miles of the Project location, offices, per diem expenses, printing, providing or shipping of deliverables in the quantities set forth in **Exhibit A**.

ARTICLE 8. Payment for Extra Services

8.1 Any charges for Extra Services shall be paid by District as described in **Exhibit B** at the rates set forth in **Exhibit D** only upon certification of District's prior written authorization of the claimed Extra Services and the Extra Services have been satisfactorily completed.

8.2 CM shall submit to District a written proposal describing the proposed scope of services and listing the personnel, labor duration, rates, and cost. CM shall proceed with Extra Services only upon receiving District's prior written authorization. CM will not be entitled to any compensation for Extra Services performed prior to receiving District's written authorization.

8.3 If CM performs any Extra Services without District's authorized representative's prior written authorization, District will not be obligated to pay for such Extra Services. The foregoing provision notwithstanding, CM will be paid by District as described in **Exhibit B** for Extra Services District's authorized representative verbally requests, provided CM confirms such request in writing pursuant to the notice requirements of this Agreement, and proceeds with such Extra Services not earlier than two (2) business days after District receives CM's written confirmation of the request.

ARTICLE 9. Ownership of Data

9.1 All of CM's work product prepared or generated in connection with this Agreement is District's property.

9.2 Upon District's request, CM shall make available to District all work product completed or in progress at the time of such a request.

9.3 After Project completion or, if District exercises the right to terminate this Agreement pursuant to the Agreement terms, CM shall assemble and deliver to District within five (5) calendar days of District's written request, all of CM's work product of the generated, prepared, reviewed or compiled in connection with this Agreement and the Services and authorized Extra Services hereunder. This includes, without limitation, all CM generated documents, copies of all documents CM exchanged with or copied to or from all other Project participants, and all closeout documents. CM shall be index and organize appropriately said Project records for easy use by District personnel.

9.4 All Project records are District property, whether or not those records are in CM's possession. District retains all rights to all copyrights, designs, and other intellectual property embodied in the plans, record drawings, specifications, estimates, and other documents that CM or its Consultants prepare or cause to be prepared pursuant to this Agreement. Notwithstanding the preceding sentence, CM and its Consultants shall be entitled to reuse work product generated under this Agreement.

ARTICLE 10. Termination of Contract

10.1 District's Request for Assurances: If District at any time reasonably believes CM is or may be in default under this Agreement, District may in its sole discretion notify CM of this fact and request written assurances from CM of performance of Services and a written plan from CM to remedy any potential default under the terms this Agreement that District may advise CM of in writing. CM shall, within ten (10) calendar days of District's request, deliver a written cure plan that meets District's requirements in its request for assurances. CM's failure to provide such written assurances of performance and the required written plan, within ten (10) calendar days of request, will constitute a material breach of this Agreement sufficient to justify termination for cause.

10.2 District's Termination of CM for Cause: If CM fails to perform CM's duties to District's satisfaction, or if CM fails to fulfill in a timely and professional manner CM's material obligations under this Agreement, or if CM violates any of the material terms or provisions of this Agreement, District shall have the right to terminate this Agreement effective immediately upon District giving CM written notice thereof. In the event of a termination pursuant to this subdivision, CM may invoice District for all work performed until the notice of termination, but District shall have the right to withhold payment and deduct any amounts equal to District's costs because of CM's actions, errors, or omissions.

10.3 District's Termination of CM for Convenience: District shall have the right in its sole discretion to terminate this Agreement for its own convenience. In the event of a termination for convenience, CM may invoice District and District shall pay all undisputed invoice(s) for work performed until the notice of termination. This shall be the only amount(s) potentially owing to CM if there is a termination for convenience.

10.4 CM's Termination of Agreement for Cause: CM has the right to terminate this Agreement if District does not fulfill its material obligations under this Agreement and fails to cure such material default within sixty (60) days of receipt of written notice of said defaults, or if the default cannot be cured within sixty (60) days, commence to cure such default, diligently pursue such cure, and complete the cure within a reasonable time following written notice and demand from CM. Such termination shall be effective after receipt of written notice from CM to District.

10.5 Effect on Pre-Termination Services: Except as indicated in this Article, termination shall have no effect upon any of the rights and obligations of the Parties arising out of any transaction occurring prior to the effective date of such termination.

10.6 Ceasing Services upon Termination: If, at any time in the progress of performing Services under this Agreement, District determines that CM's Services should be terminated, CM, upon District's written notice of such termination, shall immediately cease providing

Services, except to transfer files as directed by District. District shall pay CM only the fee associated with the Services provided and approved by District since the last paid invoice and up to the notice of termination.

10.7 Project Suspension: If the Project is suspended by District for more than one hundred and eighty (180) consecutive days, CM shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the schedule shall be adjusted and CM's compensation shall be equitably adjusted to provide for expenses incurred in the resumption of CM's Services. CM shall make every effort to maintain the same Project personnel after suspension.

ARTICLE 11. Indemnity

11.1 To the furthest extent permitted by California law, CM shall indemnify and hold free and harmless District, its Governing Board, agents, representatives, officers, consultants, employees, trustees, and volunteers ("the Indemnified Parties") from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity ("Claim") that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of CM, its officers, employees, subcontractors, consultants, or agents, including without limitation, the payment of all consequential damages. CM shall also, to the furthest extent permitted by California law, defend the Indemnified Parties at CM's own expense, including attorneys' fees and costs, from any and all Claim(s) and allegations relating thereto with counsel approved by District where such approval is not to be unreasonably withheld.

11.2 CM shall pay and satisfy any judgment, award, or decree that may be rendered against the Indemnified Parties in any Claim. CM's obligation pursuant to Article 11.1 includes reimbursing District for the cost of any settlement paid by the Indemnified Parties and for any and all fees and costs, including but not limited to, legal fees and costs, expert witness fees, and consultant fees, incurred by the Indemnified Parties in the defense of any Claim(s), or to enforce the indemnity herein. CM's obligation to indemnify shall not be restricted to insurance proceeds.

11.3 District may withhold from amounts owing to CM any and all costs that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of CM.

ARTICLE 12. Conduct on Project Site and Fingerprinting

12.1 Unacceptable and/or loud language will not be tolerated. "Cat calls" or other derogatory language toward students or public will not be allowed.

12.2 Drugs, alcohol, and smoking on District property are strictly prohibited. No drugs, alcohol and/or smoking are allowed at any time

in any building and/or grounds on District's property. No students, staff, visitors or contractors are to use drugs on District's property.

12.3 Pursuant to Education Code section 45125.1, the Fingerprinting/Criminal Background Investigation Certification (**Exhibit F**) must be completed and attached to this Agreement prior to CM's performing of any portion of the Services. CM expressly acknowledges that the following conditions shall apply to any work performed by CM and/or CM's employees on a school site:

12.3.1 All site visits shall be arranged through District;

12.3.2 CM and CM's employees shall inform District of their proposed activities and location at the school site, allowing District time to arrange site visits without a disruption to the educational process;

12.3.3 CM and/or CM's employees shall check in with the school office each day immediately upon arriving at the school site;

12.3.4 Once at such location, CM and CM's employees shall not change locations without contacting District;

12.3.5 CM and CM's employees shall not use student restroom facilities; and

12.3.6 If CM and CM's employees find themselves alone with a student, CM and CM's employees shall immediately contact the school office and request that a member of the school staff be assigned to the work location.

12.4 For all workers on District property, CM shall comply with all applicable federal, state and local laws regarding COVID-19. Further, except to the extent the Order provides otherwise, CM and CM's personnel shall continue to comply with all other applicable terms in the CDPH's State Public Health Officer Orders.

12.5 **COVID-19 Vaccination / Testing Requirements.**

Vaccination Requirements

CM shall fill out, sign, date and submit to District the COVID-19 Vaccination Certification Form (**Exhibit G**).

According to the August 11, 2021, California Department of Public Health ("CDPH") State Public Health Officer Order ("Order"), a person is "fully vaccinated" for COVID-19 if two weeks or more have passed since they have received the second dose in a 2-dose series (Pfizer-BioNTech or Moderna or vaccine authorized by the World Health Organization), or two weeks or more have passed since they received a single-dose vaccine (Johnson and Johnson[J&J]/Janssen).

Pursuant to the CDPH Guidance for Vaccine Records Guidelines & Standards, PM/CM shall only accept the following as proof of vaccination:

(a) COVID-19 Vaccination Record Card (issued by the Department of Health and Human Services Centers for Disease Control & Prevention or WHO Yellow Card which includes name of person vaccinated, type of vaccine provided and date last dose administered);

(b) a photo of a Vaccination Record Card as a separate document;

(c) a photo of a Vaccination Record Card stored on a phone or electronic device;

(d) documentation of COVID-19 vaccination from a health care provider;

(e) digital record that includes a QR code that when scanned by a SMART Health Card reader displays to the reader name, date of birth, vaccine dates and vaccine type; or

(f) documentation of vaccination from other contracted employers who follow these vaccination records guidelines and standards.

In the absence of knowledge to the contrary, CM may accept the documentation presented in (a) through (f) above as valid.

CM shall have a plan in place for tracking verified CM personnel vaccination status. Records of vaccination verification must be made available, upon request, to the local health jurisdiction for purposes of case investigation.

CM personnel, including any and all tiers of consultant, subcontractor, supplier, and any other personnel entering the Project site(s), who are not fully vaccinated, or for whom vaccine status is unknown or documentation is not provided, must be considered unvaccinated.

Weekly Testing Requirements

CM shall ensure that CM personnel, including any and all tiers of consultant, subcontractor, supplier, and any other worker entering the Project site(s), who are unvaccinated or who are not fully vaccinated are required to undergo diagnostic screening testing, as specified below:

(a) CM personnel may be tested with either antigen or molecular tests to satisfy this requirement, but unvaccinated or incompletely vaccinated workers must be tested at least once weekly with either PCR testing or antigen testing. Any PCR (molecular) or antigen test used must either have Emergency Use Authorization by the U.S. Food and Drug Administration or be operating per the Laboratory Developed Test requirements by the U.S. Centers for Medicare and Medicaid Services.

(b) Unvaccinated or not fully vaccinated CM personnel must also observe all other infection control requirements, and are not exempted from the testing requirement even if they have a medical contraindication to vaccination, since they are still potentially able to spread the illness. Previous history of COVID-19 from which the individual recovered more than 90 days earlier, or a previous positive antibody test for COVID-19, do not waive this requirement for testing.

CM shall have a plan in place for tracking test results and conducting workplace contact tracing, and must report results to local public health departments, if applicable.

ARTICLE 13. Responsibilities of District

13.1 District shall examine the documents submitted by CM and shall render decisions so as to avoid unreasonable delay in the process of CM's Services.

13.2 District shall provide to CM as complete information as is available to District regarding District's Project requirements.

13.3 District shall retain design professional(s) whose services, duties and responsibilities will be described in written agreement(s) between District and design professional(s).

13.4 Unless the contract documents require that Contractor provide any of the following, District shall, in a timely manner, and with CM's assistance, secure, submit and pay for necessary approvals, easements, assessments, permits and charges required for the construction, use, or occupancy of permanent structures or for permanent changes in existing facilities, subject to CM's and/or the Design Team's duties to recommend or provide same.

13.5 District, its representatives, and consultants shall communicate with the Contractor either directly or through CM.

13.6 District shall designate an officer, employee and/or other authorized representatives to act on District's behalf with respect to the Project. District's Project representative shall be available during working hours and as often as may be required to render decisions and to furnish information in a timely manner.

ARTICLE 14. Liability of District

14.1 Other than as provided in this Agreement, District's obligations under this Agreement shall be limited to the payment of the compensation as provided in this Agreement. Notwithstanding any other provision of this Agreement, in no event shall District be liable, regardless of whether any claim is based on contract or tort, for any special, consequential, indirect or incidental damages, including but not limited to, lost profits or revenue, arising out of or in connection with this Agreement for the services performed in connection with this Agreement.

14.2 CM shall pay to District any and all costs incurred by District, or for which District may become liable, to the extent caused by negligent delays, acts, or omissions of CM in its performance of its Services.

14.3 District shall not be responsible for any damage to persons or property as a result of the use, misuse or failure of any equipment used by CM, or by its employees, even though such equipment be furnished or loaned to CM by District.

14.4 CM hereby waives any and all claim(s) for recovery from District under this Agreement, which loss or damage is covered by valid and collectible insurance policies. CM agrees to have its required insurance policies endorsed to prevent the invalidation of insurance coverages by reason of this waiver. This waiver shall extend to claims paid, or expenses incurred, by CM's insurance company on District's behalf.

ARTICLE 15. Insurance

15.1 CM shall procure, prior to commencement of Services, and will maintain for the duration of the Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CM, their agents, representatives, employees and sub-consultant(s). CM's liabilities, including but not limited to, CM's indemnity or defense obligations under this Agreement, shall not be deemed limited in any way to the insurance coverage required herein. Maintenance of specified insurance coverage is a material element of this Agreement and CM's failure to maintain or renew coverage or to provide evidence of renewal during the term of this Agreement, as required or when requested, may be treated by District, subject to its sole discretion, as a material breach of contract.

15.2 **Minimum Scope and Limits of Insurance**: Coverage shall be at least as broad as the following scopes and limits:

15.2.1 **Commercial General Liability.** Two million dollars ($2,000,000) per occurrence for bodily injury, personal injury, property damage, death, advertising injury, and medical payments arising from the performance of any portion of the Services. If Commercial General Liability or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this Project/location or the general aggregate limit shall be twice the required occurrence limit.

15.2.2 **Commercial Automobile Liability, Any Auto**. One million dollars ($1,000,000) per occurrence.

15.2.3 **Workers' Compensation**. Statutory limits required by the State of California. For all of CM's employees who are subject to this Agreement and to the extent required by the applicable state or federal law, CM shall keep in full force and effect, a Workers' Compensation policy. CM shall provide an endorsement that the insurer waives the right of subrogation against District and its respective elected officials, officers, employees, agents, representatives, consultants, trustees, and volunteers.

15.2.4 **Employer's Liability.** One million dollars ($1,000,000) per accident for bodily injury or disease. For all of CM's employees who are subject to this Agreement, CM shall keep in full force and effect, an Employment Practices

Liability policy. That policy shall provide employers' liability coverage with minimum liability coverage of Two million dollars ($2,000,000) per occurrence. CM shall provide an endorsement that the insurer waives the right of subrogation against District and its respective elected officials, officers, employees, agents, representatives, consultants, trustees, and volunteers.

15.2.5 **Professional Liability**. This insurance shall cover CM and its sub-consultant(s), if any, for one million dollars ($1,000,000) aggregate limit subject to no claim deductible, coverage to continue through completion of construction plus three years thereafter. The policy must contain terms or endorsements extending coverage that requires the insurer to defend and indemnify for acts which happen before the effective date of the policy provided the claim is first made during the policy period.

15.3 District reserves the right to modify the limits and coverages described herein, with appropriate credits or charges to be negotiated for such changes.

15.4 **Deductibles and Self-Insured Retention**: Any deductibles or self-insured retention exceeding Twenty-Five Thousand Dollars ($25,000) must be declared to and approved by District. At the option of District, either:

15.4.1 District can accept the higher deductible;

15.4.2 CM's insurer shall reduce or eliminate such deductibles or self-insured retention as respects District, its officers, officials, employees and volunteers; or

15.4.3 CM shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

15.5 **Other Insurance Provisions**: The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

15.5.1 All policies except for the worker's compensation, employer's liability and professional liability insurance policy shall be written on an occurrence form.

15.5.2 District, its representatives, consultants, trustees, officers, officials, employees, agents, and volunteers ("Additional Insureds") are to be covered as additional insureds as respects liability arising out of activities performed by or on behalf of CM; Instruments of Service and completed operations of CM; premises owned, occupied or used by CM; or automobiles owned, leased, hired or borrowed by CM. The coverage shall contain no special limitations on the scope of protection afforded to

the Additional Insureds. All endorsements shall waive any right to subrogation against any of the Additional Insureds.

15.5.3 Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the Additional Insureds.

15.5.4 CM shall pay all insurance premiums, including any charges for required waivers of subrogation or the endorsement of additional insureds. If CM fails to maintain insurance, District may take out comparable insurance, and deduct and retain amount of premium from any sums due CM under the Agreement.

15.5.5 CM's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

15.5.6 Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled, not renewed, or material change in coverage except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to District.

15.5.7 CM's insurance coverage shall be primary and non-contributory insurance as respects the Additional Insureds with respect to any claims related to, arising out of, or connected with the Project. Any insurance or self-insurance maintained by the Additional Insureds shall be in excess of CM's insurance and shall not contribute with it.

15.5.8 CM shall provide an endorsement that the insurer waives the right of subrogation against District and its respective elected officials, officers, employees, agents, representatives, consultants, trustees, and volunteers.

15.5.9 CM shall require all subconsultants to maintain the level of insurance CM deems appropriate with respect to the consultant's scope of the Work unless otherwise indicated in the Agreement. CM shall cause the subconsultants to furnish proof thereof to District within ten (10) days of District's request. Should CM not require subconsultants to provide the same level of insurance as is required of CM, as provided in this Agreement, CM is not relieved of its indemnity obligations to District or fulfilling its insurance requirements as provided in this Agreement.

15.5.10 If CM normally carries insurance in an amount greater than the minimum amounts required herein, that greater amount shall become the minimum required amount of insurance for purposes of the Agreement. Therefore, CM hereby acknowledges and agrees that all insurance

carried by it shall be deemed liability coverage for all actions it performs in connection with the Agreement.

15.6 **Acceptability of Insurers**: Insurance is to be placed with insurers admitted in California with a current A.M. Best's rating of no less than A:VII. CM shall inform District in writing if any of its insurer(s) have an A.M. Best's rating less than A:VII. At the option of District, District may either:

15.6.1 Accept the lower rating; or

15.6.2 Require CM to procure insurance from another insurer.

15.7 **Verification of Coverage**: Prior to commencing with its provision of Services under this Agreement, but no later than three (3) calendar after the Notice of Award, CM shall furnish District with:

15.7.1 Certificates of insurance showing maintenance of the required insurance coverage;

15.7.2 Original endorsements affecting coverage. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements are to be received and approved by District before work commences.

15.8 **Copy of Insurance Policy(ies):** Upon District's request, CM will furnish District with a copy of all insurance policies related to its provision of Services under this Agreement.

ARTICLE 16. Nondiscrimination

CM agrees to comply with the provisions of the California Fair Employment and Housing Act as set forth in part 2.8 of division 3 of the California Government Code, commencing at section 12900; the Federal Civil Rights Act of 1964, as set forth in Public Law 88-352, and all amendments thereto; Executive Order 11246; and all administrative rules and regulations found to be applicable to Consultant and all of its subcontractors. In addition, Consultant agrees to require like compliance by all of its subcontractor(s).

ARTICLE 17. Covenant Against Contingent Fees

CM warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for CM, to solicit or secure this Agreement, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for CM, any fee, commission, percentage, brokerage fee, gift, or any other consideration contingent on or resulting from the award or making of this Agreement. For breach or violation of this warranty, District shall have the right to annul this Agreement without liability, or in its discretion, to deduct from the contract price or consideration or otherwise recover the full amount of such fee, commission, percentage fee, gift, or contingency.

ARTICLE 18. Entire Agreement/Modification

This Agreement, including the Exhibits hereto, supersedes all previous contracts and constitutes the entire understanding of the Parties hereto. CM shall be entitled to no benefit other than those specified herein. No changes, amendments or alterations shall be effective unless in writing and signed by both Parties. CM specifically acknowledges that in entering into this Agreement, CM relies solely upon the provisions contained in this Agreement and no others.

ARTICLE 19. Non-Assignment of Agreement

This Agreement is intended to secure CM's specialized services. CM may not assign, transfer, delegate or sublet any interest therein without District's prior written consent. Any assignment, transfer, delegation or sublease without District's prior written consent shall be considered null and void.

ARTICLE 20. Law, Venue

20.1 This Agreement has been executed and delivered in the State of California and the validity, enforceability and interpretation of any of the clauses of this Agreement shall be determined and governed by the laws of the State of California.

20.2 To the fullest extent permitted by California law, Santa Clara County shall be the venue for any action or proceeding that may be brought or arise out of, in connection with or by reason of this Agreement.

ARTICLE 21. Dispute Resolution

21.1 All claims, disputes or controversies arising out of, or in relation to the interpretation, application or enforcement of this Agreement may be decided through mediation as the first method of resolution. Notice of the demand for mediation of a dispute shall be filed in writing with the other party to the Agreement. The demand for mediation shall be made within a reasonable time after written notice of the dispute has been provided to the other party, but in no case longer than ninety (90) days after initial written notice.

21.2 If a claim, or any portion thereof, remains in dispute upon satisfaction of all applicable dispute resolution requirements, CM shall comply with all claims presentation requirements as provided in Chapter 1 (commencing with section 900) and Chapter 2 (commencing with section 910) of Part 3 of Division 3.6 of Title 1 of Government Code as a condition precedent to CM's right to bring a civil action against District. For purposes of those provisions, the running of the time within which a claim must be presented to District shall be tolled from the time CM submits its written claim until the time the claim is denied, including any time utilized by any applicable meet and confer process.

21.3 Notwithstanding any disputes, claims or other disagreements between CM and District, CM shall continue to provide and perform Services hereunder pending a subsequent resolution of such disputes.

ARTICLE 22. Tolling of Claims

CM agrees to toll all statutes of limitations for District's assertion of claims against CM that arise out of, pertain to, or relate to Contractors' or subcontractors' claims against District involving CM's work, until the Contractors' or subcontractors' claims are finally resolved.

ARTICLE 23. Severability

If any term, covenant, condition or provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions hereof shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

ARTICLE 24. Employment Status

24.1 CM shall, during the entire term of Agreement, be construed to be an independent contractor and nothing in this Agreement is intended nor shall it be construed to create an employer-employee relationship, a joint venture relationship, or to allow District to exercise discretion or control over the professional manner in which CM performs the Services which are the subject matter of this Agreement; provided always, however, that the Services to be provided by CM shall be provided in a manner consistent with all applicable standards and regulations governing such Services.

24.2 CM understands and agrees that CM's personnel are not and will not be eligible for: membership in, or to receive any benefits from, any District group plan for hospital, surgical or medical insurance; membership in any District retirement program; paid vacation, paid sick leave or other leave, with or without pay; or any other benefits which accrue to a District employee.

24.3 Should District, in its discretion, or a relevant taxing authority such as the Internal Revenue Service or the State Employment Development Department, or both, determine that CM or any employee of CM is an employee of District for purposes of collection of any employment taxes, the amounts payable under this Agreement shall be reduced by amounts equal to both the employee and employer portions of the tax due (and offsetting any credits for amounts already paid by CM which can be applied against this liability). District shall then forward those amounts to the relevant taxing authority.

24.4 Should a relevant taxing authority determine a liability for past services performed by CM for District, upon notification of such fact by District, CM shall promptly remit the amount due or arrange with District to have the amount due withheld from future payments to CM under this Agreement (again, offsetting any amounts already paid by CM which can be applied as a credit against that liability).

24.5 A determination of employment status pursuant to the preceding two paragraphs shall be solely for the purposes of the particular tax in question, and for all other purposes of this Agreement, CM shall not

be considered an employee of District. Notwithstanding the foregoing, should any court, arbitrator, or administrative authority determine CM is an employee for any other purpose, then CM agrees to a reduction in District's liability resulting from this Agreement pursuant to principles similar to those stated in the foregoing paragraphs so that the total expenses of District under this Agreement shall not be greater than they would have been had the court, arbitrator, or administrative authority determined CM was not an employee.

24.6 Nothing in this Agreement shall operate to confer rights or benefits on persons or entities not a party to this Agreement.

ARTICLE 25. Warranty of CM

25.1 CM warrants that CM is properly licensed and/or certified under the laws and regulations of the State of California to provide the Services that it has herein agreed to perform. CM further warrants that all of the work CM performs under this Agreement shall comply with all applicable laws, rules, regulations and codes of the United States and the State of California. CM also warrants that it shall comply with all applicable ordinances, regulations, and resolutions of Santa Clara County, California.

25.2 CM certifies that it is aware of the provisions of the California Labor Code of the State of California, requiring every employer to be insured against liability for workers compensation or to undertake self-insurance in accordance with the provisions of that code, and it certifies that, if applicable, it will comply with those provisions before commencing the performance of the work of this Agreement.

25.3 To the extent that the work performed under this contract is subject to labor compliance and enforcement by the DIR, CM specifically acknowledges and understands that it shall perform the Services while complying with all applicable provisions of Division 2, Part 7, Chapter 1 of the Labor Code and Title 8 of the California Code of Regulations, including all applicable prevailing wage requirements.

ARTICLE 26. Cost Disclosure - Documents and Written Reports

CM shall be responsible for compliance with California Government Code section 7550, if the total cost of the Agreement is over five thousand dollars ($5,000).

ARTICLE 27. Communications / Notice

Notices and communications between the Parties to this Agreement may be sent to the following addresses by registered or certified mail with postage prepaid, return receipt requested, by overnight delivery service, or by personal delivery:

District:

Alum Rock Union School District
2930 Gay Avenue
San Jose, CA 95127
ATTN: Kolvira Chheng
Assistant Superintendent of
Business Services
EMAIL: kolvira.chheng@arusd.org

With a Copy to:
Dannis Woliver Kelley
200 California Street #400
San Francisco, CA 94111
ATTN: Deidree Sakai, Esq.

CM:

_____
_____
_____
ATTN: _____
EMAIL: _____

If notice is given by registered or certified mail with postage prepaid, return receipt requested, it shall be considered delivered on the day the notice is signed for. If notice if given by overnight delivery service, it shall be considered delivered on the date stated in the proof of delivery.

CM and District, by notice given hereunder, may designate different addresses to which subsequent notices, certificates or other communications will be sent.

ARTICLE 28. Disabled Veteran Business Enterprise Participation

Pursuant to section 17076.11 of the Education Code, District has a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%), per year, of funds expended each year by District on projects that use funds allocated by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act (the "Act"). This Project may use funds allocated under the Act. Therefore, CM, before it executes the Agreement, shall provide to District certification of compliance with the procedures for implementation of DVBE contracting goals, appropriate documentation identifying the amount(s) intended to be paid to DVBEs in conjunction with the contract, and/or documentation demonstrating CM's good faith efforts to meet these goals.

ARTICLE 29. District's Right to Audit

29.1 District retains the right to review and audit, and the reasonable right of access to CM's and any Consultant's premises to review and audit CM's compliance with the provisions of this Agreement ("District's Right"). District's Right includes the right to inspect, photocopy, and to retain copies, outside of CM's premises, of any and all Project-related records and other information with appropriate safeguards, if such retention is deemed necessary by District in its sole discretion. District shall keep this information confidential, as allowed by applicable law.

29.2 District's Right includes the right to examine any and all books, records, documents and any other evidence of procedures and practices that District determines is necessary to discover and verify

whether CM is in compliance with all requirements of this Agreement.

29.3 If there is a claim for additional compensation or for Extra Services, District's Right includes the right to examine books, records, documents, and any and all other evidence and accounting procedures and practices that District determines is necessary to discover and verify all direct and indirect costs, of whatever nature, which are claimed to have been incurred, or anticipated to be incurred.

29.4 CM shall maintain complete and accurate records in accordance with generally accepted accounting practices in the industry. CM shall make available to District for review and audit all Project-related accounting records and documents and any other financial data. Upon District's request, CM shall submit exact duplicates of originals of all requested records to District.

29.5 CM shall include audit provisions in any and all of its subcontracts, and shall ensure that these sections are binding upon all Consultants.

29.6 CM shall comply with these provisions within fifteen (15) days of District's written request to review and audit any or all of CM's Project-related records and information.

ARTICLE 30. Other Provisions

30.1 CM shall be responsible for the cost of construction change orders caused directly by CM's willful misconduct or negligent acts, errors or omissions. Without limiting CM's liability for indirect or consequential cost impacts, the direct costs for which CM shall be liable shall equal its proportionate share of the difference between the cost of the change order and the reasonable cost of the work had such work been a part of the originally prepared Construction Documents. These amounts shall be paid by CM to District or District may withhold those costs from amounts due or to become due to CM.

30.2 Neither District's review, approval of, nor payment for, any of the Services required under this Agreement shall be construed to operate as a waiver of any rights under this Agreement, and CM shall remain liable to District in accordance with this Agreement for all damages to District caused by CM's failure to perform any of the Services furnished under this Agreement to the standard of care of CM for its Services, which shall be, at a minimum, the standard of care of construction managers performing similar work for California public school districts at or around the same time and in or around the same geographic area of District.

30.3 CM shall share, credit, or reimburse District fifty percent (50%) of the amount of any tax deduction and/or credit CM receives for District Projects under the Commercial Buildings Energy-Efficiency Tax Deduction, 26 U.S. Code § 179D ("Section 179D"). CM shall

provide District with all necessary documentation to enable District to verify the amounts of the Section 179D tax deduction. CM shall notify District in writing of the Section 179D tax deduction within 30 days of when CM receives IRS notice of the Section 179D tax deduction or receives the Section 179D tax refund, whichever occurs first.

30.4 Each party warrants that it has had the opportunity to consult counsel and understands the terms of this Agreement and the consequences of executing it. In addition, each party acknowledges that the drafting of this Agreement was the product of negotiation, that no party is the author of this Agreement, and that this Agreement shall not be construed against any party as the drafter of the Agreement.

30.5 The individual executing this Agreement on behalf of CM warrants and represents that she/he is authorized to execute this Agreement and bind CM to all terms hereof.

30.6 This Agreement may be executed in one or more counterparts, each of which shall be deemed an original. A facsimile or electronic signature shall be deemed to be the equivalent of the actual original signature. All counterparts so executed shall constitute one Agreement binding all the Parties hereto.

ARTICLE 1. Exhibits.

Exhibits A through G attached hereto are hereby incorporated by this reference and made a part of this Agreement.

[SIGNATURES ON THE FOLLOWING PAGE]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date(s) indicated below.

ALUM ROCK UNION SCHOOL DISTRICT	**[CM]**
Date: _____, 202_	Date: _____, 202_
By: _____	By: _____
Title: _____	Title: _____

EXHIBIT A

RESPONSIBILITIES AND SERVICES OF CONSTRUCTION MANAGER

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EXHIBIT A

RESPONSIBILITIES AND SERVICES OF CONSTRUCTION MANAGER

Construction Manager ("CM") shall provide professional services necessary for completing the following:

1. BASIC SERVICES

1.1. Provide work which shall comply with professional standards and applicable requirements of federal, state, and local law.

1.2. Monitor and advise District as to all material developments in the Project. Maintain reporting systems for scope, sequencing, scheduling, budgets and communication for the Project using existing District software, if applicable.

1.3. Be the focal point of all communication to and from construction Contractor(s).

1.4. Implement methods to budget and track all expenditures on the Project. CM shall generate monthly reports to District reflecting this information.

1.5. Prepare methods to track and report on schedule status for the Project. CM shall develop master schedules and milestone schedules for the Project, and shall report on same each month to District.

1.6. CM shall work cooperatively with District to anticipate and maintain a schedule of upcoming Board information and action items and shall prepare reports, background materials, and preliminary materials in District-specified format.

1.7. CM shall work cooperatively with the Design Team and District to:

1.7.1. Define and schedule the Project.

1.7.2. Provide Services that will result in the development of an overall Project strategy with regard to phases, construction schedules, timing, budget, prequalification, contactor and consultant procurement, construction materials, building systems, and equipment.

1.8. Organize an initial planning workshop to create baseline parameters for the Project(s), to define overall building requirements, Project(s) strategy, conceptual budget and schedule. Pursuant to understandings reached at these meetings, CM will develop an implementation plan that identifies the various phases of the Project(s), coordination among phases, and budget and time constraints for each phase of the Project. The plan will include a detailed strategy, Project Budget and Project schedule as well as identification of critical events and milestone activities.

1.9. Perform constructability reviews, determine construction feasibility, availability of materials and labor, time requirements for installation and construction, and factors related to cost, including costs of alternative designs, of materials, preliminary budgets, and possible economies.

1.10. Interface with the Contractor and all subcontractors during construction to ensure that District is provided with an acceptable Project and the best value for taxpayer dollars.

1.11. Advise District as to the regulatory agencies that have jurisdiction over any portion or all of the Project, and as to coordination with and implementation of the requirements of the regulatory agencies, including without limitation DSA.

1.12. Contract for or employ, at CM's expense, sub-consultant(s) to the extent deemed necessary for CM's services. Nothing in the foregoing shall create any contractual relationship between District and any sub-consultant(s) employed by CM under terms of this Agreement.

1.13. Cooperate with District, Board, and other professionals employed by District for the design, coordination or management of other work related to the Project, including District staff and consultants, project manager(s), citizens' oversight committee, other District committees, and the community to facilitate the timely completion of the Project within Board-approved budgets and to District design standards.

1.14. Chair, conduct and take minutes of periodic meetings between District and its design professional(s), the Site Committee meetings, and construction meetings during the course of the Project. CM shall invite District and/or its representative and the Project Inspector to participate in these meetings. CM shall keep meeting minutes to document comments generated in these meetings.

1.15. Develop for District approval a Project time schedule at the start of Project development that does the following:

1.15.1. Provides sufficient time for prequalification, and if necessary the resolution of any appeals, bidding, and, if necessary, rebidding, or negotiating if applicable, the Project;

1.15.2. Coordinates and integrates the design professional(s)' design efforts with bidding schedules;

1.15.3. Includes realistic activity sequences and durations, allocation of labor and materials and delivery of products requiring long lead-time procurement; and

1.15.4. Takes into account District's occupancy requirements (showing portions of the Project having occupancy priority and ongoing operational occupancy requirements).

1.16. Be responsible for the professional quality and technical accuracy of all cost estimates, constructability reviews, studies, reports, projections, opinions of the probable cost of construction, and other services furnished by CM under this Agreement as well as coordination with all Master Plans, studies, reports and other information provided by District to CM. CM shall, without additional compensation, correct or revise any errors or omissions in materials it generates.

1.17. Maintain a log of all meetings, site visits or discussions held in conjunction with the work of the Project, with documentation of major discussion points, observations, decisions, questions or comments. These shall be furnished to District and/or its representative for inclusion in the overall Project documentation.

1.18. Coordinate transmittal of documents to regulatory agencies for review and advise District of potential problems in completion of such reviews.

1.19. Prepare a bidders list for each bid package for approval by District.

1.20. Assistance with administration of the prequalification process;

1.21. Assistance in development of documents necessary or appropriate for bidding the Construction Contract for the Project;

1.22. Development of bidders' interest in a Project, including but not limited to telephonic and correspondence campaigns and preparing and placing notices and advertisements to solicit bids for the Project(s);

1.23. Assistance in conducting job walks and bidders' conferences and the maintenance and preparation of minutes of job walks or bidder's conferences;

1.24. Assistance in responding to bidders' inquiries and the development of bid addenda as necessary or appropriate;

1.25. Review of bid proposals for responsiveness to bid requirements, evaluation of bidder responsibility, and analysis of completed questionnaires;

1.26. Interviewing possible bidders, references, bonding agents and financial institutions;

1.27. Preparing recommendations for District for pre-qualification of prospective bidders;

1.28. Tabulations and evaluation of bid results along with a recommendation for award of the Construction Contract for a Project;

1.29. Assisting with resolution of any appeals;

1.30. For Lease Leaseback projects, coordinate Request for Qualifications/Proposals ("RFP") process and assist in negotiation of agreements, including, Site Lease and Facilities Lease with guaranteed maximum price; and

1.31. Preparation of agenda items for Board approval.

1.32. Provide documentation, pictures, and other information and assistance to District for District's use on a website for public access to show Project status.

1.33. Provide direction and planning to ensure Project adherence to applicable environmental requirements, such as those emanating from the Environmental Protection Agency ("EPA"), Cal/EPA, the California Environmental Quality Act ("CEQA"), and State of California laws, regulations and rules. CM shall comply with, and ensure that all Consultants, all Contractors and their subcontractors and design professionals and their subconsultants comply with, any storm water pollution prevention plans, other storm water management program and other environmental impact mitigation requirements that are approved by District and applicable to the Project, at no additional cost to District.

1.34. Cooperate and implement District's reporting to and interface with the Labor Commissioner's Office, including but not limited to:

1.34.1. Registering public works project with the Department of Industrial Relations (DIR) within thirty (30) days of the award, but in no event later than the first day in which a contractor has workers employed upon the public work;

1.34.2. Requiring proof of public works contractor registration before accepting a bid or awarding a contract; and

1.34.3. Reporting any suspected public works violations to the Labor Commissioner.

1.35. CM shall maintain accurate Project cost accounting records maintained with generally accepted accounting principles ("GAAP") on authorized work performed under unit costs, actual costs for labor and material, or other basis for maintaining required accounting records. CM shall provide accounting records to District on a monthly basis, or as reasonably requested by District. CM shall afford District access to these records and preserve these records for a period of three (3) years after final payment, at no cost to District.

1.36. Assist Architect with the preparation of an estimate of costs for all addenda and coordinate with Architect to submit the estimate to District for approval. Assist and coordinate with Architect as required to adjust the Construction Cost Budget and other Project costs as indicated in this Agreement and as required in the Agreement for Architectural Services.

1.37. Provide and maintain a management presence on the Project site.

1.38. CM is **NOT** responsible for:

1.38.1. Ground contamination or hazardous material analysis.

1.38.2. Any asbestos testing, design or abatement; however, it shall coordinate and integrate its work with any such information provided by District.

1.38.3. Compliance with the California Environmental Quality Act ("CEQA"), except that CM agrees to coordinate its work with that of any CEQA consultants retained by District, and the work of Contractor and the Design Team to provide current information for use in CEQA compliance documents and to identify and carry out mitigation measures.

1.38.4. Historical significance report.

1.38.5. Soils investigation.

1.38.6. Geotechnical hazard report.

1.38.7. Topographic survey, including utility locating services.

2. GENERAL PROJECT SERVICES

2.1 **General**: Monitor and advise District and Program Manager as to all material developments on the Project. CM shall implement with District approval reporting methods developed by Program Manager for schedules, cost and

budget status. CM shall be the focal point of all communication to and from construction Contractor and shall be copied on all communications between District and its Design Team.

2.2 **Scheduling**: Track and report on schedule status for Project. CM shall develop Project master schedules and milestone schedules, and review and approve Contractor project schedules and milestone schedules for the project per specifications, and shall report on same each month to District and Program Manager.

2.3 **Cost Controls**: Implement methods to track construction expenditures on the Project using methods developed by Program Manager. CM shall generate monthly reports to District reflecting this information.

3. PRECONSTRUCTION PHASE

3.1 To the extent requested by District or Program Manager, assist with providing overall coordination of the Project; serve as the focal point of communication, transmitting information to District and Design Team on general aspects of the Project, including planning, scheduling, cost management, progress reporting, design review, dispute resolution, and documentation. Communications from the construction Contractor to District and Design Team shall be through CM. CM shall receive simultaneous copies of all written communications from District or the Design Team to the construction Contractor.

3.2 To the extent requested by District or Program Manager, assist with the detailed definition of project scope, budget, and schedule, as needed. Review and reconcile cost estimates from the assigned architect and coordinate peer review estimates when requested by District. Advise District regarding owner-supplied equipment and other potential cost-saving measures.

3.3 To the extent requested by District or Program Manager, assist District in the solicitation and retention of design and engineering consultants, and coordinate design consultants' activities and delivery schedules, as needed. Provide value engineering and life cycle cost analysis.

3.4 Provide design-phase services in conjunction with the architecture firms awarded the Project by District. Work with the Architect to conform and refine designs to correlate designs to budget and Facilities Master Plan, if applicable. Review design documents for constructability, scheduling, consistency, and coordination during schematic and design development phases of work. Perform constructability reviews at appropriate stages of design. Assist with verification of site conditions. Expedite design reviews, including modifications. Keep accurate documentation of all discussions with users regarding scope and resolution.

3.5 Prepare and maintain a Construction Management schedule for the Project. Prepare a procurement plan and move in occupancy planning, where required.

3.6 To the extent requested by District or Program Manager, assist with monitoring and reporting to District on status of design and state approval in relation to the schedule for the Project. Attend meetings to coordinate design efforts for the Project. Assist in identifying and obtaining all necessary approvals.

3.7 To the extent requested by District or Program Manager, assist with soliciting proposals, evaluate, and recommend other professional consultants needed to complete the Project.

3.8 Implement District-approved implementation procedures, forms and reporting requirements for the Project that involve all members of the Project team, including District, Design Team, and construction Contractor.

3.9 Work with the Design Team and District to develop the final sizes, choice of materials, services and utilities and other detailed design and performance criteria of the Project.

3.10 To the extent requested by District or Program Manager, provide value engineering at the Schematic Design and/or 100% Design Development Phase. This evaluation will consist of a review of the proposed materials, equipment, systems and other items depicted in the design documents and shall be coordinated with District's design guidelines and design professional(s). CM will prepare a value engineering report documenting the results of the evaluation and make recommendations to District with respect to alternatives, deletions, or amendments of such proposed items that pertain to the anticipated construction costs, useful life, maintenance and operational costs and efficiencies. CM shall provide to District value engineering recommendations and cost/benefit analysis of those recommendations.

3.11 Perform or subcontract for constructability reviews of the Project at the Design Development Phase and at 90% of the Construction Documents Phase. CM shall review the design documents for clarity, consistency, constructability and coordination. The results of the review shall be provided in writing and as notations on the documents to District. CM shall also make recommendations to District with respect to constructability, construction cost, sequence of construction, and construction duration.

3.12 Develop master bid/award schedule(s) including construction milestones for the Project through the completion of construction, as directed by District, in coordination with design professional(s) and advise and consult with District. CM shall review and approve construction Contractor's schedules, but shall not dictate any construction Contractor's means and/or methods of performance.

3.13 Establish schedules for any Consultant, and for any hazardous materials or other testing, and review costs, estimates, and invoices of each.

3.14 Implement a management control system to support such functions as planning, organizing, scheduling, budgeting, reporting progress, and identifying and documenting problems and solutions for the Project. Prepare monthly progress reports for District regarding the schedule for the Project.

3.15 To the extent requested by District or Program Manager, organize an initial planning workshop to create baseline parameters for the Project, to define overall building requirements, Project strategy, conceptual budget and schedule. Pursuant to understandings reached at these meetings, CM will develop an implementation plan that identifies the various phases of the Project, coordination among phases, and budget and time constraints for each phase of the Project. The plan will include a detailed strategy, master budget and master schedule as well as identification of critical events and milestone

activities.

3.16 To the extent requested by District or Program Manager, provide updated cost estimates for the Project at the Schematic Design, Design Development, and Construction Documents Phases as directed by District; coordinate with design professional(s) and reconcile cost estimates with design professional(s)' estimates.

3.17 Advise District regarding "green building" technology and lifecycle costing, when applicable.

3.18 Fully coordinate all changes requested by any utility company needed to complete the Project.

3.19 Review and tailor District's front end documents for the Project. Recommend the number of days required for the construction phase (and any sub-phases, such as hazardous material abatement) and recommend the amount of the liquidated damages.

4. PRE-BID PHASE

4.1 Develop master schedules and construction schedules for the Project. Develop budget(s) for the Project based on construction cost estimates.

4.2 In consultation with District and according to District-approved policies, procedures, and standards, implement procedures, forms, and reporting requirements for the Project. Establish, accordingly, a communications procedure for the Project that allows for decision making at appropriate levels of responsibility and accountability.

4.3 Work with the Program Manager and Design Team to modify or add to standard, special, or general conditions for contract documents that might be needed for unique Project or contract conditions, for District's approval, and/or assist in the development of documents necessary for the bidding phase.

4.4 To the extent requested by District or Program Manager, make recommendations for development and implementation of procedures to comply with applicable bidding or RFP requirements for the Project as applicable and for expediting completion of the bidding process for the Project. The scope of the foregoing includes without limitation, recommendations of CM with respect to: (a) pre-qualification of potential contractors; (b) combination of two or more of the Projects for design, bidding and/or construction purposes; and (c) alternative construction delivery approaches for the Project, including consideration of a single general contractor and/or Lease Leaseback approach to construction for each Project.

5. BIDDING PHASE

5.1 To the extent requested by District or Program Manager, assist with pre-qualification process for the selection of prime and/or sub-contractors based on the detailed definition of Project scope, budget, schedule, and programming support. Develop a list of pre-qualified prime and sub-contractors, as required.

5.2 Develop bidders' interest in the Project. Coordinate all bid phase activities with District departments. Conduct pre-bid conferences to familiarize bidders with the bidding documents, and any special systems, materials or methods and with Project procedures. Conduct job walks and bidders' conferences, maintain and prepare minutes of job walks or bidder's conferences. Field questions from bidders, referring questions to Design Team and District as required. Coordinate with Design Team to respond to bidder questions by addenda.

5.3 Prepare public solicitation notices for District approval. Review, coordinate, and estimate cost of bid phase addenda.

5.4 Review bid proposals for responsiveness to bid requirements, evaluate bidder responsibility, and conduct reference checks. Prepare bid analyses and advise District on compliance of bidders with District requirements and bid requirements. Report and recommend to District after review and evaluation. Make recommendations to District for prequalification of bidders and award of contracts or rejection of bids.

5.5 Conduct post-bid conferences as required. Assist and advise regarding bid protests.

5.6 If appropriate, coordinate contracting with Contractor awarded the contract, including evaluating bonds and insurance, and negotiate final terms of construction contractor's contract(s), if applicable.

5.7 Conduct pre-award conferences with successful bidders.

5.8 Schedule and conduct preconstruction meetings. Maintain, prepare, and distribute minutes.

5.9 Assist with the preparation of agenda items for Board approval. Coordinate submittals required by governing agencies.

6. CONSTRUCTION PHASE

6.1 Administer the construction Contract.

6.2 Develop detailed construction schedules or review Contractor's submitted schedules, as needed. Administer and coordinate the work of Contractor on a daily basis. Enforce performance, scheduling, and notice requirements. Review Contractor's schedule submittals and make recommendations to District.

6.3 Monitor schedule and cost information for Contractor. Document the progress and costs of the Project. Report and advise proactively on potential schedule and budget variances and impacts. Recommend potential solutions to schedule and cost problems. Work cooperatively with District, Architect, and Contractor to ensure that Project is delivered on time and within budget. Review construction progress and prepare reports.

6.4 Verify permits, approvals, bonds, insurances, and schedules of values. Coordinate with DSA Project Inspector, and ensure compliance with all DSA reporting and closeout requirements. Submit necessary reports to state and local authorities.

6.5 Monitor the construction Contractor to verify that tools, equipment, and labor are furnished and work performed and completed within the time required or indicated by the plans and specifications, under the direction and to the satisfaction of District. CM expressly agrees to verify that the specifications are met, observed, performed, and followed in accordance with the professional standards of care for construction management.

6.6 Coordinate work of the construction Contractor and effectively manage the Project to achieve District's objectives in relation to cost, time and quality.

6.7 Provide continuous on-site construction management personnel, as needed. Conduct construction meetings for the Project to discuss and resolve such matters as progress, quality and scheduling. Said meetings shall be weekly unless Project conditions do not require that frequency. Prepare and promptly distribute minutes. When required by field or other conditions, construction progress, or the quality of workmanship, conduct special construction meetings; record, prepare, and distribute minutes of these meetings to District, the affected construction Contractor, and Design Team.

6.8 Establish and implement team communication procedures.

6.9 Ensure that construction Contractor provides construction schedules as required by the construction Contracts, including activity sequences and durations, submittal schedule, or procurement schedule for products that require long lead time. CM shall review construction Contractor's construction schedules for conformity with the requirements of the construction Contract and conformity with the overall schedule for the Project. Where construction Contractor's construction schedules do not so conform, CM will take appropriate measures to secure compliance, subject to District approval.

6.10 Ensure construction Contractor's compliance with the requirements of the respective construction Contract for updating, revising, and other obligations relative to their respective construction schedules.

6.11 Cost Control. CM shall develop and monitor an effective system of construction cost control for the Project. CM shall identify variances between actual and budgeted or estimated costs and advise District and design professional(s) whenever a Project cost exceeds budgets or estimates. CM shall manage the construction bids and contracts in accordance with the Construction Budget.

6.12 Continually monitor whether construction contract requirements are being fulfilled and recommend courses of action to District when Contractor fails to fulfill contractual requirements.

6.13 CM may authorize minor variations in the work from the requirements of the contract documents that do not involve an adjustment in the contract price or the contract time or design and which are consistent with the overall intent of the contract documents. CM shall provide to the design professional(s) and District copies of these authorizations.

6.14 Evaluate and process payment applications and verify progress.

6.15 Verify that safety programs are developed and submitted by the construction Contractor as required by the Contract. Neither CM, Project Manager nor

District shall be responsible for or have any liability for Contractor's failure to provide, comply with, or enforce said safety programs.

6.16 Implement quality control program, including As-Built Drawings accuracy. Coordinate and evaluate Contractor's recovery schedules.

6.17 Record the progress of the Project by a log.

6.18 Monitor ongoing Project costs to verify that projected costs do not exceed approved budget and provide District timely notice of any potential increase in costs in excess of approved budgets provided to CM.

6.19 Negotiate Contractor's proposals and review change orders prepared by Design Team, with Design Team's input as needed, for approval by District.

6.20 Evaluate and process change order requests. Make recommendations to District. Determine cost and schedule effects of change orders. Prepare change order reports and maintain a change order log for the Project and implement procedures to expedite processing of change orders.

6.21 Assist District in coordinating the services of special consultants and testing laboratories on the Project.

6.22 In conjunction with the Design Team, monitor work of the construction Contractor to determine that the work is being performed in accordance with the requirements of the respective construction documents for the Project, including but not limited to the plans, specifications, addenda, and all other contract documents, as well as all applicable laws, regulations and directives of agencies with jurisdiction over any of the Project. As appropriate, with assistance of Design Team, make recommendations to District and Program Manager regarding special inspection or testing of work that is not in accordance with the provisions of the contract documents.

6.23 To guard District against defects in the work of the construction Contractor, CM shall implement a quality control program to monitor the quality and workmanship of construction for conformity with:

6.23.1 Accepted industry standards;

6.23.2 Applicable laws, rules, or ordinances; and

6.23.3 The design documents and contract documents.

6.24 Where the work of a construction Contractor does not conform as set forth above, CM shall, with the input of Design Team:

6.24.1 Notify District of any non-conforming work observed by CM;

6.24.2 Reject the non-conforming work; and

6.24.3 Take any and all action(s) necessary to compel the construction Contractor to correct the work.

6.25 Evaluate, track, and maintain logs of requests for information ("RFI") from construction Contractor and responses, shop drawings, samples, and other

submittals, based, in part, on information obtained from the design professional(s). Advise District and Program Manager as to status and criticality of RFIs.

6.26 Implement procedures, in collaboration with District, Program Manager and Design Team, for expediting the processing and approval of shop drawings, product data, samples, and other submittals for each contract. Receive and transmit all submittals from the construction Contractor to the Design Team for review and approval. Maintain submittal and shop drawing logs.

6.27 Record the progress of work at the Project. When present, prepare daily reports for the Project containing a record of weather, construction Contractor(s) present and their number of workers, work accomplished, problems encountered, and other relevant data.

6.28 Prepare and distribute monthly project status reports for the Project including updates on project activities, progress of work, outstanding issues, potential problems, schedule, and status of RFIs, change orders, and submittals.

6.29 Coordinate, assist, and support Architect during construction administration phase as required.

6.30 CM shall maintain records of principal building layout lines, elevations of the bottom of footings, floor levels, and key site elevations as provided by the construction Contractor. At the completion of the Project, deliver all such records to District. Construction Contractor and design professional(s) share responsibility to prepare Record Drawings and As-Built Drawings.

6.31 Coordinate the move into the Projects.

6.32 Work with District team to develop lists of incomplete or unsatisfactory work ("punch lists").

6.33 Fully document and prepare deductive change orders for extra services of consultants that are the responsibility of a Contractor or another consultant. Present such a change order for signature by the Contractor or consultant.

6.34 Determine final completion and payment. Determine completion dates, final payments, and release of retention. Coordinate procurement and installation of Furniture, Fixtures, and Equipment ("FF&E").

7. PROJECT COMPLETION

7.1 CM shall observe the construction Contractor's check-outs of utilities, operational systems and equipment, and start-up and testing. CM shall maintain records of start-up and testing as provided by the construction Contractor and shall ensure District of compliance with applicable provisions of the Contract, that all work has been performed and accepted, and that all systems are complete and operative.

7.2 At the punch list phase of the Project or designated portions thereof, CM, in consultation with the Architect, shall ensure the preparation of a list of incomplete or unsatisfactory work or work which does not conform to the requirements of the contract documents ("punch list work") and a schedule for

the completion of the punch list work. CM shall provide this list to the construction Contractor. CM shall coordinate construction Contractor's performance and completion of punch list work. CM shall review, with the Architect and District, the completed punch list work. CM shall ensure that, with input of the Architect, the completed punch list work complies with applicable provisions of the construction Contract.

7.3 CM shall determine, with the Architect and District, when the Project or designated portions thereof are complete.

7.4 CM shall conduct, with the Architect and District, final inspections of the Project or designated portions thereof. CM shall notify District of final completion.

7.5 CM shall consult with the Architect and District and shall determine when the Project and the construction Contractor's work are finally completed. CM shall assist with the issuance of a Certificate of Final Completion, and shall provide to District a written recommendation regarding payment to the Contractor.

7.6 CM shall coordinate close-out procedures, including personnel training. Advise District staff on systems operations, training and close-out of Project.

7.7 CM shall coordinate and expedite Contractor close-out requirements, including guarantees/warranties, certificates, keys, manuals, As-Built Drawings, Record Drawings, specifications, daily logs, and verified reports. Ensure that all other project participants submit necessary close-out documentation.

7.8 CM shall coordinate operational safety reviews with District post occupancy and manage corrective work as necessary.

7.9 CM shall ensure that all building commissioning requirements have been fulfilled in a timely manner through District commissioning agents.

7.10 CM shall obtain occupancy permits (where required), coordinate final testing, documentation, and regulatory inspections. Prepare occupancy plan report.

7.11 CM shall prepare final accounting reports.

8. FINAL DOCUMENTS

CM shall review and monitor all As-Built Drawings, maintenance and operations manuals, and other closeout documents to be sure that all required documents meeting contract requirements are provided, and shall secure and transmit to District and Program Manager those documents and all required guarantees, keys, manuals, record drawings, and daily logs. CM shall also forward all documents and plans to District upon completion of the project and ensure all such plans and documents are well organized for any appropriate audit or review of the Project.

9. WARRANTY

CM shall assist Program Manager as necessary to implement a Warranty Inspection and Warranty Work procedure for the Project that Contractor must follow. The procedure shall include a twelve (12) month call back period and a final warranty

inspection eleven (11) months after Project completion to inspect the Project and identify any outstanding warranty work.

10. PROJECT CLOSEOUT

To the extent requested by District or Program Manager, CM shall assist District, Architect, and Program Manager as necessary to ensure all information and documentation necessary for Project closeout with the DSA is complete and the Project is timely closed out with DSA. This includes but is not limited to reports from independent consultants, inspectors, testing laboratories, and corresponding or required DSA forms.

[END OF EXHIBIT]

EXHIBIT B

CRITERIA AND BILLING FOR EXTRA SERVICES

The following Extra Services to this Agreement shall be performed by CM if needed and requested by District:

1. Providing services required because of significant documented changes in the Project initiated by District, including but not limited to size, quality, complexity, or District's schedule.

2. Providing consultation concerning replacement of work damaged by fire or other cause during construction and furnishing services required in connection with replacement of such work.

3. Providing services made necessary by the default of Contractor, or by major defects or deficiencies in the work of the Contractor, or by failure of performance of District's consultants.

4. Seeking variances or changes to agency guidelines on behalf of District when so directed by District.

5. Preparing to serve or serving as a witness in connection with any public hearing, dispute resolution proceeding or legal proceeding, other than that necessitated by the negligent acts, errors or omissions of CM or where CM is a party thereto, except for a Contractor's hearing necessitated by a bid protest or by a Contractor's request to substitute a subcontractor, or by handling of any stop payment notices.

6. Performing technical inspection and testing.

7. Providing other services not otherwise included in this Agreement and not customarily furnished in accordance with the generally accepted scope of construction management practice.

Format and Content of Invoices

CM acknowledges that District requires CM's invoices to include detailed explanations of the Services performed. For example, a six hour charge for the entire day is unacceptable and will not be payable. A more detailed explanation describing specific tasks is required.

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Hourly Rates for Extra Services

1. The following rates, which include overhead, administrative cost and profit, shall be utilized in arriving at the fee for Extra Services and shall not be changed for the term of the Agreement. CM shall bill in quarter-hour increments for all Extra Services.

Job Title	**Hourly Rate**
Principal in Charge	$___.__
Project Director	$___.__
Project Engineer(s)	$___.__
Project Controls Manager	$___.__
Project Admin-Financial	$___.__
Project Admin-Office	$___.__
Estimator	$___.__
Constructability Reviewer	$___.__

2. The mark-up on any approved item of Extra Services performed by sub-consultant(s) or subcontractor(s) shall not exceed five percent (5%).

[END OF EXHIBIT]

EXHIBIT C

SCHEDULE OF WORK

[To be completed/inserted]

[END OF EXHIBIT]

EXHIBIT D

FEE SCHEDULE

Compensation

1. CM's fee set forth in this Agreement shall be full compensation for all of CM's Services incurred in its performance, including, without limitation, all costs for personnel, travel within two hundred (200) miles of the Project location (travel reimbursements must be approved by District prior to travel), offices, per diem expenses, office supplies, printing, providing, or shipping of deliverables in the quantities set forth in **Exhibit A**.

2. The amount of compensation shall be the amount set forth in the Agreement, including all billed expenses. No compensation will be paid or due, without advance written approval of District.

Method of Payment of Basic Services

1. CM shall submit monthly invoices for the portion of the overall fee reflecting the services performed and costs incurred for each respective month. In no event shall the total payments exceed CM's fee set forth in Article 7 this Agreement except as authorized under **Exhibit B**.

2. CM shall submit these invoices in duplicate to District via District's authorized representative.

3. CM shall submit to District on a monthly basis documentation showing proof that payments were made to his/her sub-consultants.

4. Upon receipt and approval of CM's invoices, District agrees to make payments on all undisputed amounts after the funds are available to District and approved by the County Office of Education but no later than thirty (30) days from receipt of the invoice.

5. District may withhold or deduct from amounts otherwise due CM hereunder if CM fails to timely and completely perform material obligations to be performed on its part under this Agreement, with the amounts withheld or deducted being released after CM has fully cured such failure of performance, less costs, damages or losses sustained by District resulting therefrom.

[END OF EXHIBIT]

EXHIBIT E

IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Sections 2202-2208)

PROJECT/CONTRACT NO.: _____ between the Alum Rock Union School District ("District") and _____ _____ ("CM") ("Contract" or "Project").

Prior to bidding on or submitting a proposal for a contract for goods or services of $1,000,000 or more, the bidder/proposer must submit this certification pursuant to Public Contract Code section 2204.

The proposer must complete **ONLY ONE** of the following two options. To complete OPTION 1, check the corresponding box **and** complete the certification below. To complete OPTION 2, check the corresponding box, complete the certification below, and attach documentation demonstrating the exemption approval.

☐ **OPTION 1.** Proposer is not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b), and we are not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

☐ **OPTION 2.** Proposer has received a written exemption from the certification requirement pursuant to Public Contract Code sections 2203(c) and (d). *A copy of the written documentation demonstrating the exemption approval is included with our proposal.*

CERTIFICATION:

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the bidder/proposer to the OPTION selected above. This certification is made under the laws of the State of California.

Vendor Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	*Date Executed*

[END OF EXHIBIT]

EXHIBIT F

FINGERPRINTING CERTIFICATION/CRIMINAL BACKGROUND INVESTIGATION

The undersigned does hereby certify to District that I am a representative of CM entering into this Agreement with District; that I am familiar with the facts herein certified; and that I am authorized and qualified to execute this certificate on behalf of CM.

CM certifies that it has taken at least one of the following actions (check all that apply):

☐ The Work of the Agreement is either (i) at an unoccupied school site and no employee and/or subcontractor or supplier of any tier of the Agreement shall come in contact with District pupils or (ii) if CM's employees or any subcontractor or supplier of any tier of the Contract interacts with pupils, such interaction shall only take place under the immediate supervision and control of the pupil's parent or guardian or a school employee, so that the fingerprinting and criminal background investigation requirements of Education Code section 45125.1 shall not apply to CM under the Agreement.

☐ CM, who is not a sole proprietor, has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all CM's employees and all of its subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Agreement, and the California Department of Justice has determined (A) that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1 and/or (B) that the prohibition does not apply to an employee as provided by Education Code section 45125.1(e)(2) or (3). When CM performs the criminal background check, it shall immediately provide any subsequent arrest and conviction information it receives to District pursuant to the subsequent arrest service. No work shall commence until the Department of Justice ascertains that CM's employees and any subcontractors' employees have not been convicted of a felony as defined in Government Code Section 45122.1.

A complete and accurate list of CM's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Agreement is attached hereto as ATTACHMENT "A."

☐ CM is a sole proprietor and intends to comply with the fingerprinting requirements of Education Code section 45125.1(h) with respect to all CM's employees who may have contact with District pupils in the course of providing services pursuant to the Agreement, and hereby agrees to District's preparation and submission of fingerprints such that the California Department of Justice may determine (A) that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1 and/or (B) that the prohibition does not apply to an employee as provided by Education Code section 45125.1(e)(2) or (3). No work shall commence until the Department of Justice ascertains that CM has not been convicted of a felony as defined in Government Code Section 45122.1.

CM's responsibility for background clearance extends to all of its employees, subcontractors, and employees of subcontractors coming into contact with District pupils regardless of whether they are designated as employees or acting as independent contractors of CM.

FINGERPRINTING CERTIFICATION/CRIMINAL BACKGROUND INVESTIGATION

ATTACHMENT "A"

List of Employees/Subcontractors

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

Name/Company: _____

If further space is required for the list of employees/subcontractors, attach additional copies of this page.

Date: _____

Name of CM: _____

Signature: _____

Print Name: _____

Title: _____

[END OF EXHIBIT]

EXHIBIT G

COVID-19 VACCINATION STATUS/TESTING CERTIFICATION

COVID-19 VACCINATION/TESTING CERTIFICATION

Construction Manager ("CM"): _____

The California Department of Public Health ("CDPH") requires, pursuant to its August 11, 2021, Order ("Order"), that all public and private schools serving students in transitional kindergarten through grade twelve, unless exempt, are required to verify the vaccine status of all K-12 school workers, effective October 15, 2021. Further, pursuant to the Order, all such schools are required to verify that all workers are either fully vaccinated or undergo weekly diagnostic testing.

In light of these CDPH requirements, CM certifies that the following entity: _____ has verified that CM personnel providing services at District's Project site(s):

☐ Have all been fully vaccinated in accordance with the CDPH Order.

☐ Have not all been fully vaccinated, but those who are unvaccinated or not fully vaccinated undergo weekly diagnostic testing in accordance with the CDPH Order.

☐ Have not been fully vaccinated and do not undergo weekly diagnostic testing in accordance with the CDPH Order.

CM understands that the District's Project site will need to comply with the CDPH Order's COVID-19 requirements for fully vaccinated personnel or unvaccinated personnel. Personnel who are not fully vaccinated or decline to state their vaccination status will be treated as unvaccinated, and CM will comply with the CDPH Order, and all applicable state and local laws for vaccinated and unvaccinated personnel.

CERTIFICATION

I, _____,

certify that I am CM's _____ and that I have made a diligent effort to ascertain the facts with regard to the representations made herein.

Date: _____

Name of Firm: _____

Signature: _____

Print Name: _____

Title: _____

[END OF EXHIBIT]

PROJECT MANUAL

ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM UPGRADES

Technical Specifications

ALUM ROCK UNION SCHOOL DISTRICT

SAN JOSE, CALIFORNIA

1/03/2024

JK Architecture Engineering
Project Number # 23-525

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SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General description of scope

1. Demolition and removal of selected portions of buildings or structures.
    a. Including but not limited to:
        1) Existing Server Room related to HVAC upgrades – Building 300.
        2) Existing exterior Mechanical Enclosure related to HVAC upgrades.
2. Demolition and removal, disconnecting, capping and sealing, and abandoning in place of selected site elements.
3. Salvage of existing items to be reused or recycled.
4. Hazardous material remediation
5. Abandoning in-place and/or removing below-grade construction.

1.2 RELATED SECTIONS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

B. Section 01 21 00 – Allowances

C. Section 01 22 00 - Unit Prices

D. Section 00 31 26 - Hazardous Material Information

E. Section 01 10 00 - Summary of Work - for use of the premises and phasing requirements

F. Section 01 32 00 - Construction Progress Documentation

G. Section 01 45 00 - Quality Control

H. Section 01 50 00 - Temporary Facilities and Controls

I. Section 01 73 00 - Execution Requirements

J. Section 01 74 19 - Construction Waste Management and Disposal

K. Section 01 77 19 - Closeout Requirements

L. Section 31 23 33 - Trenching and Backfilling

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

A. ASSE A10.6 – Safety and Health Program Requirements for Demolition Operations

B. 40 CFR 82 – Protection of Stratospheric Ozone

C. All applicable EPA notification regulations.

D. All applicable OSHA regulations.

E. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations

F. Resilient Floor Covering Institute (RFCI) - Recommended Work Practices for the Removal of Resilient Floor Coverings

Website Link: https://rikett.net/wp-content/uploads/2016/05/RFCI-Recommended-Work-Practices-for-the-Removal-of-Resilient-Flooring.pdf

1.5 SUBMITTALS

A. Submittals: Provide submittals per Section 01 33 00, “Submittal Procedures”.

B. Qualification Data: For refrigerant recovery technician.

C. Engineering Survey: Submit engineering survey of condition of building.

D. Proposed Protection Measures:

1. Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property.

2. Indicate proposed locations and construction of barriers.

3. Adjacent Buildings: Where damage to adjacent structures is possible, detail special measures proposed to protect adjacent buildings to remain, including means of egress from those buildings.

E. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.

2. Interruption of utility services: Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

F. Building Demolition Plans: Drawings shall indicate the following:

1. Locations of temporary protection, and means of egress protection, if applies, for adjacent occupied buildings.

G. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of work.

H. Pre demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.

1. Submit before the Work begins.

I. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

J. Closeout Submittals:

1. Submittals: Provide submittals per Section 01 77 19, “Closeout Requirements”

2. Inventory: Submit a list of items that have been removed and salvaged.

3. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

1. Comply with ANSI A10.6 and NFPA 241.

2. Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

3. Comply with all OSHA regulations.

4. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.7 PRE-INSTALLATION CONFERENCE

A. Pre-demolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review structural load limitations of existing structure.

3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

5. Review areas where existing construction is to remain and requires protection.

1.8 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.9 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.

2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.11 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of measured drawings

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.

2. Arrange to shut off utilities with utility companies.

3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.

c. Equipment to Be Removed: Disconnect and cap services and remove equipment.

d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

4. Cover and protect furniture, furnishings, and equipment that have not been removed.

5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00, "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 1 hours after flame-cutting operations
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19, "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable,

protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to substrate.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site. Recycle or dispose of them according to Section 01 74 19, "Construction Waste Management and Disposal.".

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 01 74 19, "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1. SECTION INCLUDES

A. Misc. other sheet metal flashings and trims, – coordinate with work provided in other sections.

1.3 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

A. .ANSI SPRI ED-1 – Design Standard for Edge Systems Used with Low Slope Roofing Systems.

B. ASTM B32 - Standard Specification for Solder Metal

C. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

D. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

F. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free

H. FS O-F-506 – Federal Specification: Flux Soldering: Past and Liquid.

I. NRCA (National Roofing Contractors Association)-Roofing Manual.

J. SMACNA - Architectural Sheet Metal Manual.

1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Division 01 – General Requirements.

B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.

C. Submit manufacturer's installation instructions under provisions of Division 01 – General Requirements.

1.5 QUALITY ASSURANCE

A. Fabricator: Company specializing in sheet metal flashing work with 5 years minimum experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products under provisions of Division 01 – General Requirements.

B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.

C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 MOCKUPS

A. Provide mockups for Architect’s review and approval of critical transitions (corners, edge conditions, etc.)

B. Provide mockups of all profiles listed in drawing for Architect’s approval for size, gauge, and color.

C. Mockups may be included in final work.

1.8 WARRANTY

A. Warranty Submittals: Provide submittals per Division 01 – General Requirements.

B. Contractor's Guarantee:

1. Provide Owner with written Guarantee on Contractor's letterhead and signed by General Contractor and flashing system subcontractor.

2. Provide guarantee against the following defects for a time period of three years, commencing from the date of final acceptance of the project.

3. Flashing blow-off or permanent deformation from wind.

4. Water intrusion through flashing joints into the building interior.

5. Make inspections and emergency repairs to defects or leaks in the roof system within twenty-four (24) hours of receipt of notice from the Owner.

6. Restore the affected areas to the standard of the original specifications as soon as weather permits.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

A. Galvanized Steel:

1. Classification: Per ASTM A653/A653M and A924/A924M.

B. Finish: Hot Dip galvanized, G90 coating. See Section 09 91 00, “Painting” for preparation, primers and finishes related to galvanized sheet metal.

C. Gauge As specified and shown on drawings. If not shown on drawings, provide minimum 22 gauge.

D. Manufacture and install copings, roof edge flashings, etc. tested according to ANSI/SPRI ES-1 and capable of resisting the established design pressure.

2.2 ACCESSORIES

A. Fasteners: Galvanized steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.

B. Sealant: Type specified in Section 07 92 00, “Joint Sealers”.

C. Solder: ASTM B 32; type with less than 0.2% lead.

D. Flux: FS O-F-506.

H. Counter-Flashing: Galvanized Steel, with wind-locks at 32 inches on center and at each corner.

I. Corners: Provide factory prefabricated corner assemblies.

J. Through Wall Flashing: Provide factory prefabricated Manufactured through-wall flashing

K. Components:

1. Provide sheet metal work as shown on Drawings and not specified under other Sections. Fabricate as indicated. Where specific details are not shown, fabricate according to applicable SMACNA "Architectural Sheet Metal Manual" criteria.

2. Form sections true to shape, accurate in size, square, and free from distortion or defects. Match profiles at connections. Provide ribs, cleats, and reinforcement necessary to make sections rigid and substantial. Allow for expansion and contraction.

3. Unless noted otherwise, fabricate cleats and starter strips of same material as sheet, minimum 2 inches wide, interlocked with fabrication.

4. Form pieces in longest practical lengths. Locate joints of fasciae, roof edges, and other sheet metal work exposed to view with respect to panel joints or other architectural features as indicated on Drawings, or as directed by Architect.

5. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip and cleat interlock.

6. Generally, provide shop joints single locked and soldered, or lapped, riveted and soldered. Provide field joints designed to permit expansion, with joint covers or lapped joints with "S" clips. Do not solder.

7. Provide all concealed stiffeners and bracing at roof edge trim, fascia and gutter cover as required by Architect.

8. Form material with flat lock seams unless noted otherwise. Overlap seams in direction of flow with finished width of lock seams and soldered lap seams not less than 1 inches, and finished width of unsoldered lap seams not less than 3 inches.

9. Where specified, solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Provide smooth even surface on exposed soldering on finished surfaces.

10. Provide shop formed transition and corner pieces with locked and soldered corners. Locate field joints not less than one foot nor more than three feet from actual corner. Shortest length dimension of any corner piece leg shall not be less than one foot.

11. Locate parapet coping expansion joints 20 feet on center maximum, and as otherwise required to permit expansion and contraction.

12. Fabricate flashing assemblies as specified in this Section and as shown on Drawings.

2.2. FINISH

A. Paint flashing applications as specified below in off-site shop location.

2.3. OTHER \MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection:

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

4. Verify roof membrane, elastomeric flashing, waterproof underlayment and base flashings are in place, sealed, and secure.

5. In the event of discrepancy, immediately notify the Architect.

6. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

B. Preparation:

1. Field measure site conditions prior to fabricating work.

2. Install starter and edge strips, and cleats before starting installation.

C. Flashing Installation:

1. Support all flashings with firm and stable attachments, anchored into solid backing as required.

2. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3. Where required by installation, solder metal joints watertight for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

4. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.

5. Insert flashings into reglets to form tight fit. Secure in place in accordance with the manufacturer's instructions.

D. Coping Installation:

1. Install coping with cleats and clips as specified and as shown on drawings. Provide continuous cleat at exterior surface. Provide approved fasteners at inside (roof) surface at 24 inches on center.

2. Install coping intermediate joints as specified.

3. Provide waterproof underlayment over wall framing and under coping flashing. Provide elastomeric flashing at all coping joints, extending 12 inches each side of joint. Coordinate with plaster underlayment installation.

4. Attach coping with welded connections, mechanical fasteners, clips, and brackets. Do not solder.

E. Fabrication Schedule:

1. Coping:

a. Material and Gage: Galvanized Steel.

b. Flashing with an exposed vertical face of 8" or less: 24 gauge.

c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.

d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.

e. Finish: As specified in this Section.

f. SMACNA Reference: Table 3-1, with J9 drive cleat, flat lock seam joint design, C1 corner, and E1 edge.

2. Prefabricated and Fabricated Reglet Counterflashing:

a. Material and Gauge: Galvanized steel, 22 gauge, painted.

b. Finish: As specified in this Section, painted.

3. Miscellaneous flashing, roof flashing, metal flashing assemblies and counterflashing:

a. Material and Gauge: Galvanized Steel:

b. Flashing with an exposed vertical face of 8" or less: 24 gauge.

c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.

d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.

e. Finish: As specified in this Section, painted

END OF SECTION

SECTION 07 92 00

JOINT SEALERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preparing sealant substrate surfaces.

B. Sealant and backing.

1.2 REFERENCES

A. ASTM C834 – Latex Sealing Compounds.

B. ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.

C. FS TT-S-227 – Sealing Compound: Elastomeric Type, Multi-Component.

D. FS TT-S-230 – Sealing Compound: Elastomeric Type, Single Component.

E. FS TT-S-1543a – Sealing Compound: Silicone Type.

F. FS TT-S-001657 – Sealing Compound: Single Component, Butyl Rubber Based.

1.3 SUBMITTALS FOR REVIEW

A. Submit product data under provisions under Division 1.

B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color availability and shore hardness.

C. Color of visible sealant to match adjacent painted surface unless specifically noted otherwise

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years experience.

B. Applicator: Company Specializing in applying the work of this Section with minimum three years experience.

C. Conform to Sealant and Waterproofers Institute requirements for materials.

1.5 FIELD SAMPLES

A. Provide samples under provisions under Division 1.

B. Construct one field sample illustrating sealant type, color, and tooled surface, maximum 12 inches long, in each differing sealant application.

C. Do not proceed with remainder of sealant application until approved by the Architect.

D. Approved sample may remain as part of the Work. Disapproved sample shall be removed.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation. Deliver materials in unopened containers, store in dry, covered area.

PART 2 - PRODUCTS

2.1 SEALANTS

A. Use sealants selected from the following types, as indicated on drawings or as appropriate to the joint being sealed. Refer to schedule for additional approved applications.

1. Type 1: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type II, non-sag, Class A DYNATROL I, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-1a, manufactured by Silka Corp., Lyndhurst, NJ, or equal.

    a. Elongation Capability: 25 Percent.

    b. Shore A Hardness Range: 20 To 40.

2. Type 2: Multi-part Polyurethane Base. FS TT-S-227E, Class A, Type II, non-sag, DYNATROL II, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ, or equal.

    a. Elongation Capability: 50 Percent.

    b. Shore A Hardness Range: 20 To 35.

3. Type 3: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type 1, self leveling, Class A, UREXPAN NR-201, manufactured by Pecora Corp., Harleysville, PA, VULKEM 45, manufactured by MAMECO International

Inc., Cleveland, OH, or equal.

a. Elongation Capability: 25 Percent.

b. Shore A Hardness Range: 35.

4. Type 4: Multi-part Polyurethane Base. FS TT-S-227, Type I, self-leveling, Class A, DYNATRED or UREXPAN NR-200, manufactured by Sika Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ or equal.

   a. Elongation Capability: 250 – 300 Percent.

   b. Shore A Hardness Range: 40.

5. Type 5: One-part Silicone Sealant. FS TT-S-1543a Type S, non-sag, Class A, 863 ACETOXY Silicone Sealant, manufactured by Pecora Corp., Harleysville, PA, SCS 1200, manufactured by General Electric Co., Waterford, NY, or equal.

   a. Elongation Capability: 25 Percent.

   b. Shore A Hardness Range: 27.

6. Type 6: One-part, non-sag, acrylic latex sealing compound, ASTM C834, AC-20 manufactured by Pecora Corp., Harleysville, PA, ACRYLIC LATEX No. 834 manufactured by Tremco, Beachwood, OH, or equal.

7. Type 7: One-part, non-sag, butyl rubber base acoustical sealant ASTM C834, BA-98, manufactured by Pecora Corp., Harleysville, PA, SHEETROCK ACOUSTICAL SEALANT manufactured by USG, Chicago, IL, or equal.

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 25 percent larger than joint width; DENVERFOAM or GREENROD, manufactured by Pecora Corp., Harleysville, PA. SONOFOAM BACKER ROD, manufactured by Sonneborn building Products, Minneapolis, MN, or equal.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application. Apply to bottom of joints which are too shallow to receive foam backer rod.

2.3 FIRESTOP SEALANTS – **Not Used**

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing surfaces.

3.2 PREPARATION

A. Clean and prime joints in accordance with manufacturer's instructions.

B. Remove loose materials and foreign matter which might impair adhesion of sealant. Remove dust with compressed air.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with manufacturer's recommendations.

E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions, using hand pointing tools, hand- operated pressure guns or air operated guns with reciprocal pumps and hoses.

B. Measure joint dimensions and size materials to achieve required width/depth ratios.

C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width. Where sealant is applied to concrete, concrete is to be fully cured.

D. Install bond breaker where joint backing is not used. Install removable masking material to maintain clean lines and protect adjoining surfaces.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges. Do not install sealant on wet or damp surfaces.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Tool joints concave, channel shaped or as detailed. Use slicking agent type recommended by manufacturer.

3.4 CLEANING AND REPAIRING

A. Clean adjacent soiled surfaces immediately before sealant cures.

B. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished installation from the work of other sections.

B. Protect sealants until cured.

3.6 SCHEDULE

A. Exterior Joints; Unless Specified Otherwise in Individual Sections:

1. Joints between metal frames and concrete or masonry: Sealant Type (1).

2. Joints Between Impervious Materials: Sealant Type (1).

4. Joints in sheet metal flashings: Sealant Type (1).

B. Interior Joints; Unless Specified Otherwise in Individual Sections: **Not Used**

1. Vertical expansion and control joints: Sealant Type (1).

2. Joints between impervious materials: Sealant Type (1).

3. Horizontal expansion, control, isolation and abutment joints: Sealant Type (3) or (4).

4. Window and door perimeters: Sealant Type (1).

5. Gypsum Board Joints: Sealant Type (1).

6. For sink, tub or bath areas including countertop joints: Sealant Type (5).

7. Other interior joints as indicated or shown: Sealant Type (1).

8. Intersection of wall surface and cap strip at resilient flooring integral cove: Sealant Type (1).

9. Intersection of metal or wood thresholds and floor substrate, where building components are mechanically attached and required sealing: Sealant Type (6).

10. Perimeter of sound-rated walls, at intersection of gypsum board and abutting surfaces, both sides of wall: Sealant Type (7).

END OF SECTION

SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Surface finish schedule includes painting of all exposed surfaces, except as otherwise specified or indicated.

D. Painting of all new and existing piping, ductwork, conduit and supports to match interior/exterior paint finishes.

1.2 RELATED SECTIONS

A. Section 00 72 00 - General Conditions.

B. Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 REFERENCES (Current Edition for All Standards Listed)

A. ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications. Note: Conform to this document for interpretation of terms used in this Section.

C. ASTM D3359 – Standard Test Methods for Rating Adhesion by Tape Test

D. ASTM D4060 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

E. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials

F. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials

G. ASTM G154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

H. Society for Protective Coatings (SSPC) & National Association of Corrosion Engineers (NACE):

1. SSPC Surface Preparation Specification No. 1 (SP 1) – Solvent Cleaning

2. SSPC Surface Preparation Specification No. 2 (SP 2) – Hand Tool Cleaning

3. SSPC Surface Preparation Specification No. 3 (SP 3) – Power Tool Cleaning

4. SSPC- Surface Preparation Specification No. 6 (SP 6) /NACE No. 3 - Commercial Blast Cleaning

1.4 REGULATORY REQUIREMENTS

A. Conform to the 2022 California Building Code for flame/spread/smoke density rating

requirements for finishes.

B. Furnish manufacturer's certification that all paint coatings furnished for project work comply with the EPA clean air act for permissible levels of volatile organic content for architectural coatings applied in California as designated by California Air Resources Board (CARB).

1.5 SUBMITTALS

A. Provide submittals under provisions of Section 01 33 00, "Submittal Procedures".

B. Product Data: Submit product data of all proposed products, identifying product series, material composition, performance characteristics and sheen. Product data shall include the paint manufacturers recommended mil thickness application of each coat for each type of paint specified.

C. Submit manufacturer's certificate that products comply with current safety and environmental regulations, including hazardous materials labeling and air quality/VOC regulations

D. Submit manufacturer's certificate that products are physically and chemically compatible with each other and meet listed ASTM or Federal Specifications.

E. Where applicable, provide manufacturer's written evaluation of existing paint/coating systems, including directions as to surface preparation and primers compatible with existing systems.

F. Submit manufacturer's application instructions for each painting system, including surface preparation.

G. Color Selection procedure:

1. Provide Architect with samples of complete color and sheen range available for submitted products.

2. Based on submitted samples and specified color criteria, Architect will prepare preliminary color schedule for all field applied coatings.

3. Based on preliminary color schedule, submit samples of all coatings, applied on specified substrate. Submit three samples, approximately 8 x 10 inch in size, illustrating each color and sheen scheduled.

4. After review of preliminary color schedule samples, Architect will prepare final color schedule. Where different from preliminary schedule, submit three samples, approximately 8 x 10 inch in size, illustrating revised color and sheen.

H. Submit four brush-out samples 8x10 inch in size illustrating color and sheen selected for each surface-finishing product shown in the finish schedule.

I. Field Sample: Furnish sample of actual paint colors selected on portion of building item to receive paint as directed by Architect, prior to beginning interior and exterior painting.

K. Applicator: Company specializing in commercial painting and finishing with five years documented experience.

L. Installing Foreman: Individual specializing in applying specified systems with minimum 10 years documented experience.

M. Special Inspection Procedures: See this Section.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 65 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 50 degrees F. for exterior work; 45 degrees F for interior work, unless required otherwise by manufacturer's instructions.

D. Prior to beginning preparation and coating application, provide lighting level of 80 foot-candles measured mid-height at substrate surface. Where natural lighting does not provide such levels, provide temporary lighting.

E. Apply all alcohol-based primers, vanishes, lacquers or other products that produce excessive fumes after school hours or on weekends.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00, “Product Requirements”, in manufacturer's original unopened, labeled containers, inspect to verify acceptance.

B. Store and protect products from abuse and contamination, under provisions of Section 01 60 00, “Product Requirements”.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in an enclosed metal storage container located outside of building, unless required otherwise by manufacturer's instructions.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.8 EXTRA STOCK

1. Provide one unopened five-gallon container of each color and sheen to Owner.
2. Label each container with color, sheen, and room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design - Paint: Specific products listed on Schedule in Part 3 of this Section, are indicated to establish required level of quality, appearance, and performance.

1. Kelly Moore (Specification Basis of Design for Paint) Alternate Manufacturers - Paint:
2. Sherwin Williams
3. Or approved equal

B. Basis of Design, Paint Coatings - Contacts:

1. Kelly Moore (Paints

   Address: 987 Commercial Street, San Carlos, CA 94070

   Website - https://kellymoore.com/

   a. Kelly Moore Product Representative

      Eric Patricio, Phone - (650) 544-9759, E-mail - epatricio@kellymoore.com

2.2 MATERIALS

A. Coatings: Ready mixed manufacturers paint. Process pigments to a soft paste consistency capable of being readily and uniformly dispersed to a homogeneous coating, except field catalyzed coatings.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Provide all admixtures, thinners, flow agents and other materials not specifically indicated but required to achieve the finishes specified.

2.3 FINISHES/COLOR

A. Colors shall be selected by Architect as specified.

B. Each coat shall be a perceptibly different tint.

C. Color Range (For Colors Not Selected Or Noted Elsewhere):

1. Unless noted otherwise, where exterior painting occurs, match existing school color scheme.

2. Where no color range is specified, provide single color for each item or component.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that work of this Section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Measure moisture content of surfaces using an electronic moisture meter. Provide de-humidifiers and heat as necessary to obtain required environmental conditions for interior paint applications. Do not apply finishes unless moisture content of surfaces is below the following maximums:

1. Plaster, Gypsum Wallboard: 18 percent.

2. Interior Located Wood: 15 percent, measured in accordance with ASTM D4442.

3. Exterior Located Wood: 7 percent measured in accordance with ASTM D4442.

E. In the event of discrepancy, immediately notify the Architect.

F. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

G. Contractor to arrange for Inspector's verification of proper surface preparation prior to start of painting and between each coat.

H. Beginning of paint application to any new surface means acceptance of surfaces prepared under separate specification section.

3.2 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Remove all loose and peeling paints

C. Correct all defects on existing surfaces including patching holes in walls and ceilings, skimming surfaces, repairing cracks, puttying, sanding, etc. to restore original wall finish and provide a uniform texture. Spot prime all areas of repair.

D. Clean all surfaces thoroughly with approved cleaning product. Rinse thoroughly and allow to completely dry before coating.

E. Remove or seal marks which may bleed through surface finishes with B-I-N Primer (additional coats may be required), shellac, or other approved sealers, compatible with finishes to be applied.

F. Bare or Existing Metal Surfaces:

1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.

2. Surface Preparation For Materials With High Performance Coatings: SSPC-SP6/NACE No. 3 Commercial Blast Clean to create a dense, uniform and angular anchor profile of 2.0 mils minimum

3. Completely prime entire surfaces.

4. Use an approved primer that will be compatible and warranted by the selected paint manufacturer over any surface that has been previously painted with an oil-base finish.

K. Galvanized Metal Surfaces:

1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.

2. Test all galvanized steel surfaces for evidence of chromate conversion treatments or other post-galvanizing applications that are not compatible with paint finishes.

3. Where testing demonstrates presence of such treatment, brush blast or otherwise mechanically abrade the surface as required by coating manufacturer.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. All IDF's are to be properly protected in a manner that allows ventilation adequate to prevent damage to equipment. At completion of painting work, all IDF's must be professionally cleaned by an approved technician with a minimum of 3-years of experience in computer cleaning.

E. Remove all debris, including empty paint containers, from site and properly dispose of in lawful manner.

F. Do not use storm drain system for clean-up.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions. Provide coats in appropriate mill thickness to provide suitable cover. Additional coats may be required to provide an acceptable finish depending on base tint and existing color bleed through.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish. Number of coats in schedule are the minimum required, additional coats shall be applied as required to achieve a finish that is uniform in color and sheen

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint as recommended by manufacturer.

I. Exterior surfaces, except as noted in other sections, including plasterconcrete, metal fabrications, structural components and metal flashings: Unless noted otherwise, apply paints and coatings as specified below:

1. Unless noted otherwise, do not paint exterior galvanized metals, including railings, steel structural components, all roof flashings and accessories, all plaster trim and accessories, and all mechanical and electrical system components.

2. Apply exterior paint to all roof penetrations visible to the eye from typically occupied locations in the finished project. "Typically occupied" includes those portions of the project visible to a standing person from elevated portions of the site.

3. Apply exterior paint to steel structural components, canopy decking, canopy framing, and miscellaneous fabrications visible to the eye from typically occupied locations in the finished project.

4. Unless designated as prefinished on drawings, apply exterior paint to metal roof copings, gutters, downspouts and flashings visible to the eye from typically occupied locations in the finished project.

5. Apply exterior paint to all plaster trim, reveals and accessories.

6. Do not paint exterior galvanized metal handrails and railings.

J. Apply paint to all other exterior components as specified or shown on drawings.

K. Paint suspended pipe batten systems with interior finish, applied by spray method. Paint all surfaces of grid members.

L. Paint all surfaces and building system components above ceiling grid line in single color, contrasting with grid, in system complying with schedule for specific surface or component.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment.

B. Do not paint factory finished mechanical and electrical equipment, except those exposed to view in non-utility areas. Paint factory prefinished items exposed to view in non-utility areas with color as directed by Architect.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. At interior and exterior applications, prime and paint exposed and insulated pipes, conduit, boxes, exposed and insulated ducts, mechanical equipment units, hangers, brackets, collars and supports, except where items are prefinished.

E. Replace identification markings on mechanical or electrical equipment when painted accidentally.

F. At all locations where new exposed duct work is to be painted, Contractor shall paint duct work at floor level prior to installing on wall. Once painted, protect duct work from overspray and other construction related debris. Ductwork finish shall be smooth and without blemishes. Once installed, carefully touchup any areas scratched during install.

G. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels, except fire dampers.

H. Paint exposed panels, pedestals, boxes, conduit and related electrical equipment occurring in exterior and interior finished areas.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. At end of workday remove from building flammable paint, solvents, and reducing agents.

D. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

E. Upon completion of the work of this section, remove all surplus material and related debris from the site.

3.7 SCHEDULE - GENERAL REQUIREMENTS:

A. For ease of specifying, unless otherwise noted, product numbers of Kelly Moore have been used.

1. Basis of Design Manufacturers - Paint:

a. Basis of Design – Paints, - Kelly Moore

2. Acceptable Paint Manufacturers – See Paragraph 2.1, this Section, for acceptable alternates. For alternates, a submittal is required showing equivalence to specified products per Section 01 25 00, “Substitution Procedures”

3.8 SCHEDULE - INTERIOR SURFACES – **NOT USED**

A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.

B. **New Gypsum Board Walls and Soffits** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Low Sheen/Eggshell Paint Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1007 Premium Professional Low VOC Interior Low Sheen.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1007-TDS.pdf
4. Or two coats: KM 1010 Premium Professional Low VOC Interior Eggshell.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1010-TDS.pdf

C. **New Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Flat Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1005 Premium Professional Low VOC Interior Flat.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-TDS.pdf

D. **New Gypsum Board Walls, Soffits Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar "wet" spaces – Semi-Gloss Paint Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1685 Dura-Poxy 100% Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1685-TDS.pdf?sfvrsn=2

E. **Existing Gypsum Board Walls & Soffits** at classrooms, offices, storage rooms, etc. –

Low Sheen/Eggshell Paint Finish:

1. Prep as described in Paragraphs 3.2 A-G & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two Coats: KM 1007 Premium Professional Low VOC Interior Low Sheen.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1007-TDS.pdf

F. **Existing Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Flat Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two coats: KM 1005 Premium Professional Low VOC Interior Flat

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-TDS.pdf

G. **Existing Gypsum Board Walls and Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar "wet" spaces – Semi-Gloss Paint Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two coats: KM 1685 Dura-Poxy 100% Acrylic Semi-Gloss Enamel.

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1685-TDS.pdf?sfvrsn=2

H. **Acoustical Ceiling Tiles**, Where painting is indicated – Flat:

1. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

2. Two coats: KM 1005 Premium Professional Flat Wall Paint

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-tds.pdf

I. **Wall Preparation For Vinyl Wall Coverings**:

1. One Coat Sealer: ZINSSER SHIELDZ Universal Wallcovering Primer

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/zinsser/wallpaper-primers/shieldz-universal-wallcovering-primer/

J. **Interior Non-Galvanized Metal** - Doors and Frames, Ferrous Metal Piping, Structural Steel, Miscellaneous Metal Fabrications, and Related Components:

1. Prep per Paragraphs 3.2 A-G, K, M, & N this Section.
2. One Coat: KM 6646 DTM Acrylic Eggshell Primer Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf?Status=Master&sfvrsn=8

3. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf?sfvrsn=2

4. Note: Interior structural steel and miscellaneous metal fabrications shall be shop-primed as described above and included in the scope of work for the following sections:
   a. Section 05 12 00 - Structural Steel
   b. Section 05 50 00 - Metal Fabrications
   c. Section 08 11 13 - Hollow Metal Doors and Frames

K. **Interior Galvanized and Zinc Alloy Metal** - Semi-Gloss Enamel:

1. Prep per Paragraph 3.2 L, this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link:
https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx

3. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link:
   https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

L. **Interior Cement Plaster and Interior Exposed Concrete** - Semi-Gloss at Walls and Flat at Ceilings, Enamel:

1. Prep per Paragraphs 3.2 A-G & I, this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link:
   https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1050-TDS.pdf

M. **Interior Concrete Block** - Semi-Gloss:

1. Prep per Paragraphs 3.2 A-F, this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

N. **New or Existing Interior Painted Woodwork, Wood Windows and Casework** - Semi-Gloss Enamel:

1. Prep per Paragraphs 3.2 A-F & O this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1050-TDS.pdf

3.9 SCHEDULE - EXTERIOR SURFACES - PAINT

A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.

B. **Exterior Non-Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-G, K, M and N in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx
3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf
4. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

C. **Exterior Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-G & L in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx
3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf
4. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

D. **Exterior Galvanized Metal Railings – Painted**, As Noted In Drawings - Gloss Urethane Enamel:

1. Prep as described in Paragraphs 3.2 A-G & K in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf?sfvrsn=2

4. Two Coats: KM 1828 Envy Interior/Exterior Semi-Gloss Enamel

E. **Exterior Aluminum Panels – Non-primed**:

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646 DTM-TDS.pdf?sfvrsn=2

4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

F. **Exterior Aluminum Panels – Pre-primed**:

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: Factory Prime coat (Touch up if abraded)
4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648 DTM-TDS.pdf?sfvrsn=2

G. **Exterior Cement Plaster and Exposed Exterior Concrete** - Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 247 Acry-Shield 100% Masonry Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/247-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

H. **New Concrete Block** - Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F in this Section.

2. One Coat: KM 521 Color Shield Prime & Fill Acrylic Block Filler

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/521-TDS.pdf

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

I. **Existing Concrete Block** - Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

J. **Cementitious Siding and Soffits** - Flat:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1142 Inspire Exterior 100% Acrylic Flat.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1142-TDS.pdf

K. **Exterior Wood, Wood Windows, Etc. – Painted** -Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F & O in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Description of requirements for materials, equipment and services necessary to complete trenching, excavation, backfilling and compaction as shown and specified for utilities and related structures and thrust blocks.

1. Utilities companies' requirements where applicable will take precedence over these specifications.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies.

B. Safety Regulations: Work shall comply with all Federal, state and municipal regulations regarding safety, including the requirements of the following:

1. William-Steiger Occupational Safety & Health Act of 1970.

2. All trenching work shall conform to Trench Construction Safety Orders of California State Industrial Accident Commission.

C. References and Standards:

1. American Society for Testing and Materials (ASTM):

a. D1557-78- "Moisture-Density Relations of soils Using 10 ¬lb. (4.5 kg) Rammer and 18-in. (457 mm) Drop."

D. Observations and Inspections: The District Site Inspector will observe will inspect utilities trenching, excavation, backfilling and compaction as appropriate. Contractor shall appropriately schedule all inspections prior to commencing trenching and backfilling operations. All installations are subject to satisfactory inspection by the District Site Inspector.

E. Testing:

1. Backfill material compaction inspection and other tests will be performed as deemed necessary by the District Site Inspector.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe bedding and initial backfill (electric conduits): Sand graded in accordance with ASTM D448 #67, and within the following limits:

1. ½ inch sieve: 100% passing.

2. Sand equivalent to be 50 minimum.

B. Trench Backfill material for backfilling trenches, above the pipe bedding and initial backfill material, shall be well-graded on-site native fill, less than 2 inches in greatest dimension,

PART 3 - EXECUTION

3.1 TRENCHING

A. Make all trenches open vertical or sloped construction, as recommended by the manufacturer of the pipe, and with sufficient width to provide free working space at both sides of trench and around installed item as required for caulking, joining, backfilling, and compacting. Where no manufacturer's recommendations are available, trenches shall be not less than 8 inches nor more than 16 inches wider than pipe or conduit diameter.

1. Where recommended trench widths are exceeded redesign shall be performed at no extra cost to the Owner, using stronger pipe or special installation procedures.

2. Restore all surfaces damaged or cut during excavation to original condition.

B. Excavate trench straight and true to line and grade and to a depth below the bottom of the pipe sufficient to provide for pipe bedding material as required. Trenches over-excavated in depth shall be re-filled with suitable materials and compacted to 90 percent (90%) relative compaction.

C. Excavations for utilities related structures and appurtenances, manholes, drop inlets or similar structures shall be sufficient to leave at least 12 inches clear between the outer structure surface and face of the excavations. When concrete is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation.

D. Hand excavate final 3 inches to accurate grade to provide firm and uniform bearing for conduits, or excavate additional 4 inches and provide 4 inch bed of sand to proper grade.

E. Unsatisfactory material shall be removed and replaced with suitable material compacted to 90 percent (90%) relative compaction.

F. Where depths are not shown, trench to sufficient depth to give minimum fill above top of installed item measured from adjacent finished grade as follows: (unless shown differently by electrical or telecom engineer or as required by local utility)

1. Low Voltage electrical conduit: 24 inches

3.2 CONTROL OF GROUND WATER

A. The Contractor shall provide all labor, equipment and materials for dewatering trenches and excavations and subsequent control of ground water.

3.3 PIPE BEDDING PLACEMENT

A. A four-inch (4”) layer of pipe bedding material compacted to 90 percent (90%) relative compaction (per ASTM D1557) shall be placed and accurately shaped as required for the indicated pipe elevations and grades.

3.4 BACKFILLING

A. Initial Backfill Placement: Initial backfill material shall be placed and compacted to 90 percent (90%) relative compaction (per ASTM D1557) on both sides of the pipe simultaneously to avoid displacement of the pipe, four inches (4") above pipe.

B. If trench is over excavated for any reason, use bedding material to bring the trench bottom to the elevation required.

C. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

D. Trench Backfill Placement: Subsequent trench backfill material shall be placed in layers not exceeding six inches thick, and compacted to 90 percent (90%) relative compaction (per ASTM D1557) up to six inches from finish surface or subgrade.

E. Install locator wire as indicated on the Plans.

F. Install warning tape directly above utilities, 12 inches above top of pipe.

G. Trench "Capping" Material: The trench shall be "capped" above the trench backfill with trench "capping" material compacted to 95 percent (95%) relative compaction (per ASTM D1557) to subgrade or finish surface.

H. Backfill for utility related or similar structures shall be placed as specified above and in such a manner that the structure will not be damaged.

I. Remove excess earth from site.

J. Requirements from material manufacturers shall take precedence over minimum requirements listed in this section.

3.5 COMPACTION METHODS

A. Mechanically compacted backfill: Backfill shall be mechanically compacted by means of tamping rollers, sheep foot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers.

B. Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will achieve the required compaction results or will not result in damage to adjacent ground, existing improvements, or improvements installed under contract. The contractor shall make his own determination in this regard.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING AND STRIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Asphalt concrete pavement – patch back existing paving.

B. Aggregate base course.

C. Paving accessories as specified.

1.2 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC - "Green Book"),//State of California, Department of Transportation (CalTrans), Standard Specifications,// latest edition, as adopted by jurisdictional authority, including amendments.

B. ASTM D 1188 - Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures

C. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).

D. ASTM D 2170 - Test Method for Kinematic Viscosity of Asphalts (Bituminous)

E. ASTM D 2172 - Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

1.3 SUBMITTALS

A. Mix Design: Submit asphalt mix design prepared by a certified laboratory, selected by Owner and acceptable to Owner, for review and approval.

B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

1.4 SITE CONDITIONS

A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 deg F (4 deg C) and when base is dry. Base course may be placed when air temperature is above 40 deg F (minus 1 deg C) and rising.

C. Grade Control: Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE MATERIAL

A. Provide "Crushed Aggregate Base" per SSPWC Section 200-2.2 // Section 26, CalTrans Standard Specifications,

2.2 ASPHALTIC CONCRETE PAVEMENT MATERIALS

A. Asphaltic Concrete Pavement Mixture:

1. Mix Characteristics:

a. Vehicular Paving: ½-inch aggregate asphalt concrete with a target 4 percent air voids with the binder content adjusted during production to target 3 percent air voids.

2. Asphalt binder: Asphalt binder shall consist of PG64-28.

3. Asphaltic concrete pavement shall be produced at a commercial central mixing plant.

B. Tack Coat: Slow setting asphalt emulsion SS1h per SSPWC Section 203-3 // Section 39-4.02, CalTrans Standard Specifications.

C. Tack Coat at pavement fabric: Provide AR4000 paving asphalt in compliance with SSPWC Section 302-7.2.2 // Section 88, CalTrans Standard Specifications.

D. Herbicide: Provide approved herbicide, tinted for visual identification, non-flammable formulation, and complying with all current California and EPA environmental regulations.

E. Surface Sealer: Asphalt Emulsion, www.aema.org., SS1-h, per SSPWC Section 203-9 // Sections 37 and 94, CalTrans Standard Specifications.

F. Surface Sealer: BIPCO, phone (760) 599-7210, Series 180, no known equal.

G. Surface Sealer: Guard Top by Vulcan Materials, Satin Seal by Blue Diamond or equal.

H. Paint Schedule: Alkyd-resin type, ready-mixed complying with AASHTO M 248, Type I. Apply 2-coat pavement and curb markings as scheduled below and indicated on the drawings.

a. Parking Stripes - Color: White.

2.3 OTHER MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

2.4 DESIGN CRITERIA

A. General:

1. All improvements shall be constructed per the referenced standards, the contract documents, and as specified in this section.

2. Where criteria shown on drawings or specified in this specification exceed that of the referenced standards, the more stringent criteria shall apply.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS AND PREPARATION

A. Inspection:

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3.2 PLACEMENT OF AGGREGATE BASE COURSE

A. Deliver base course to site as uniform mixtures.

B. Spread each layer in one operation, free from pockets of coarse or fine material , and in compliance with SSPWC 302-2 //Section 39, CalTrans Standard Specifications.

1. Where asphalt paving is installed to replace existing on-site locations, match existing base thickness.

3. Where asphalt paving is installed at areas without prior paving, provide minimum 6 inch compacted base thickness.

C. Application:

1. Where the required thickness is 0.5 foot or less, spread and compact base in one layer.

2. Where the required thickness is more than 0.5 foot, spread and compact base material in two or more layers of approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 0.5 foot, or less if compaction cannot be obtained with 0.5 lift.

D. Each layer shall be spread and compacted in a similar manner. When vibrating or other acceptable types of special compacting equipment are used, the entire course may be placed in one layer, provided the ability of such equipment to achieve acceptable compaction to the full layer depth is demonstrated.

E. No thin layers of fine materials shall be added to the top layer of the subbase or base course in order to meet the grade.

3.3 BASE COURSE COMPACTION AND PROTECTION

A. Compact base course material to not less than 95 of the maximum laboratory density as determined by ASTM D-1557.

B. Remove damaged base course to subgrade and place, grade and compact new base course in settled, eroded, and wetted areas to specified tolerances.

C. Where completed base course areas are disturbed by subsequent construction operations or adverse weather, remove base course in damaged areas to subgrade, and place and compact new base course to required density prior to further construction.

3.4 PREPARATION FOR PAVING

A. Apply tack coat to vertical faces of existing or previously constructed bituminous pavement, curbs, gutters, slab edges, and all structures to be in actual contact with the bituminous pavement.

B. Coat surfaces of catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

C. Prior to applying the tack coat, sweep or otherwise clean surface free of dust or other foreign material.

D. Protect all surfaces not required to receive tack coat from any inadvertent application.

E. Do not place tack coat when air temperature in the shade or the roadbed temperature is below 50 degrees F, or during rain, fog, or other adverse weather conditions.

F. After application of tack coat, allow sufficient time for complete separation of asphalt and water before paving operations begin. Do not leave tack coat exposed overnight. Apply tack coat to only those surfaces as will be paved in the same day.

G. Apply primer coat to base course surfaces in conformance with Section 302-5.3, SSPWC, //Section 39, CalTrans Standard Specifications,//at rate of 0.10 to 0.25 gallons per square yard. Allow to cure prior to application of asphalt course.

3.5 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

A. Conform to SSPWC Section 302-5 //Section 39, CalTrans Standard Specifications.

B. Do not place asphaltic concrete paving when the air temperature in the shade or the roadbed temperature is below 50 degrees F, or during rain, when the base course surface is wet, or during other adverse weather conditions.

C. Place asphalt pavement as required to provide compacted depth as indicated on the plans, in a continuous operation. Place inaccessible and small areas by hand.

1. Provide minimum 3 inch compacted thickness or as required to match existing, whichever is greater.

2. Where asphalt paving is installed to replace existing on-site locations, install in compacted thickness to match existing paving.

D. Place asphalt in single or multiple lifts per SSPWC Section 302-5.5 //Section 39-6, CalTrans Standard Specifications.

E. Ensure joints made during paving operations are straight, clean, vertical and free of broken or loose material. Carefully make joints to insure a continuous bond between old and new pavement, or between successive day's work. Provide a continuous bond between adjoining work.

3.6 ROLLING

A. Monitor temperatures of the asphalt concrete mixture as delivered to the site and during laydown to insure conformance with SSPWC Section 302-5.5 //Section 39-6, CalTrans Standard Specifications.

B. Roll and compact to specified density in accordance with SSPWC Section 302-5.6 //Section 39-6, CalTrans Standard Specifications .

C. Compact asphalt paving course to 95 percent of the maximum laboratory density, as obtained with the California Kneading Compactor, per California Test 304.

D. Perform hand tamping in areas not accessible to rolling equipment.

3.8 SEAL COAT

A. Allow completed paving to cure for minimum of 1 month prior to application of specified seal coat.

B. Conform to the manufacturers recommendations for two coat application.

C. Conform to SSPWC Section 302-8.2 //Section 39, CalTrans Standard Specifications,//for application.

D. Provide surface finish free of ridges, lap marks, coarse textured areas, or other appearance and performance defects.

A. Conform to Section 32 17 23 of this Project Manual.

3.10 PROTECTION

A. After final rolling, do not permit vehicular traffic on pavement until it has cooled to atmospheric temperature and hardened, but in no case less than 8 hours.

B. Erect barricades in accordance with requirements of Division 1 to protect paving from traffic until mixture has cooled in accordance with the specifications.

C. Do not use completed paving surface for storage of construction vehicles or construction materials.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Chain link fence framework, fabric, and accessories.

C. Excavation for footings.

D. Concrete footings

1.2 RELATED SECTIONS - NONE

1.3 REFERENCES (The latest/most current edition of each document listed below shall apply)

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

B. ASTM A153 / A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric

D. ASTM C94 / C94M - Standard Specification for Ready-Mixed Concrete

E. ASTM F567 - Standard Practice for Installation of Chain-Link Fence

F. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric

G. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework

H. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

I. Chain Link Fence Manufacturers' Institute (CLFMI) - Product Manual.

https://chainlinkinfo.org/wp-content/uploads/2017/05/CLFMI-Product-Manual-revised-March-2017-1.pdf

1.4 SYSTEM DESCRIPTION

A. Fence Height: 6'-0", unless otherwise noted.

B. Line Post Spacing: At intervals not exceeding 10 feet.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in commercial quality chain link fencing with five (5) years experience.

B. Installation: Company with demonstrated experience installing specified products within 12 month period prior to contract award and in compliance with ANSI/ASTM F567.

1) If any welding is required provide welders' certificates, verifying AWS qualification within the previous 12 months.

1.6 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on shop drawings.

1.7 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01 33 00.

B. Include plan layout, grid, spacing of components, accessories, fittings, hardware, anchorages, and schedule of components.

C. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

D. Submit manufacturer's certificate of compliance with specified requirements.

E. Submit samples of screen cloth for color selection by Architect.

1.8 WARRANTY AND GUARANTEE

A. Guarantee

1. Provide guarantee under provisions of Section 01 77 19.

2. Provide guarantee, for a period of three (3) years following final completion, against the following:

a. Corrosion of base material.

b. Fabric sagging, bowing, breakage or similar defects.

c. Fence framework failure, footing subsidence, or similar defects.

B. Warranty: Provide manufacturers five (5) year warranty coverage.

C. Warranty: Manufacture of slats to provide a 10 year warranty against color fading and breakage of slats.

PART 2 - PRODUCTS

2.1 FENCE FRAMEWORK

A. General. Conform to CLFMI Product Manual

B. Manufacturer: Provide a single manufacturer for all like products.

C. Type: Steel pipe, Schedule 40, plain end pipe complying with ASTM F 1083.

D. Fence Fabric Coating: Hot Dipped galvanized per ASTM F 1083.

E. Polymer Coating (PVC) Finish: Minimum 7 mil PVC thermal fused coating over hot dipped galvanized per ASTM F1043. Color: Standard Black.

F. Size:

1. Line Posts:

a. Fabric less than six feet high: 2.0 inches

2. Top, Bottom, Center and Brace Rail: 1.5 inches

G. Privacy Shade Screen Cloth: Heavy duty knitted polyethylene material, cloth height for 6'-0" fencing, binding edge on all sides, solid brass grommets every 24 inches and triple grommet corner. Color: Black

H. Accessories:

1. Tension Wire: ASTM A 824; 7 gage, Class 2 galvanized zinc coating.

2. Tension bars: Steel, galvanized, 3/4 inch x 1/4 inch x full length.

3. Tie Wire: 6 gage, galvanized, unless noted otherwise.

4. Hog Rings: 9 gage, galvanized steel wire.

5. Truss Rods: 3/8 inch diameter, with turnbuckle and hook or approved equal.

6. Post Cap: cast iron or steel, configuration as required to provide weatherproof closure, hot dip galvanized, set screw retainer.

7. Fittings: cast iron or steel, configuration as required for installation, hot dip galvanized.

8. Finish coating/color to match fence fabric.

2.2 FENCE FABRIC

A. Manufacturer: Provide a single manufacturer for all like products.

B. Type: Steel Wire Fabric, zinc coated, mesh woven. Top selvage twisted tight, bottom selvage knuckled end closed.

C. Characteristics:

1. Size: Two inch diamond mesh.

2. Wire gage: No.9 -

3. Edge: Knuckled selvedge at top and bottom of all fabric.

D. Finish: Class 2 zinc coating with Black PVC finish.

2.6 CONCRETE

A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water. Measure, batch, and mix Project-site-mixed concrete according to ASTM C 94/C 94M.

1. Concrete Mixes: Normal-weight concrete**,** 2% to 4% air entrained with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

B. Materials: Dry-packaged concrete mix complying with ASTM C 387 for normal-weight concrete mixed with potable water according to manufacturer's written instructions.

2.7 POST SLEEVES

A. Provide hot dipped galvanized steel sleeve, schedule 40, sized to permit minimum of 3/4 inch grout space between post and inside of sleeve.

2.8 GROUT

A. Atlas Ultimate HP Grout or equal, non-shrink when tested in accordance with CRD-C-621 and ASTM C 827, providing minimum compressive strength of 2,500 psi at 24 hours and 8,000 psi at 28 days.

1) Website Product Link:

2) https://www.atlasform.com/pages/Atlas%20Tech-Concrete%20Chemicals%20&%20Repair%20Materials/technical%20data%20sheet/atlas%20ultimate%20hp%20grout.pdf

2.9 OTHER MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3. In the event of discrepancy, immediately notify the Architect.

4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 FOOTING PREPARATION AND INSTALLATION

A. Install concrete foundations at all fencing posts.

1. Line Posts:

a. Fabric less than six feet high: 30 inch deep x 8 inch diameter.

2. Corner, Gate and Terminal Posts:

a. Fabric less than six feet high: 36 inch deep x 12 inch diameter.

B. Install concrete with crown watershed, set 2 inches above adjacent grade.

C. Where fencing is installed in curbs, slabs or walls, provide specified sleeves. Center post in sleeve and fill with non-shrink grout.

3.3 INSTALLATION

A. General

1. Install framework in accordance with ANSI/ASTM F567, at height indicated on drawings.

2. Install framework following profile of finish grade, with maximum of 1 inch between bottom of fence edge or bottom rail and adjacent grade or paving. Do not install posts in ditches, dips or on mounds.

3. Set terminal, gate and line posts plumb and aligned. Embed post to within 3 inches of bottom of footing. Slope top of concrete for water runoff.

4. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail, one bay from end and gate post.

5. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

6. All field welding to be performed by certified welder and all welds are to be ground down smooth.

7. All clamping bolts protruding from clamp shall be cut off flush to nut and exposed end of bolt shall be galvalumed. Galvanized acorn nut is also an acceptable means of protecting students from sharp edges.

B. Line Posts

1. Space line posts at intervals not exceeding 10 feet, equidistant between break points.

D. Rails, Tension Wire and Truss Rods

1. Provide top rail through line post tops and splice with 7 inch long rail sleeves.

a. Provide center rail at mid height of all tennis court fencing.

2. Provide tension wire, 2 inches above grade, stretched between terminal posts. Fasten at each line post.

E. Fabric

1. Allow concrete to attain sufficient strength prior to installing fabric.

2. Stretch fabric between terminal posts.

3. Position bottom of fabric approximately 1 inch above finished grade.

4. Where possible, place wire fasteners, clip ends and other fastening devices on fence side away from student path. Fasten fabric to top rail, line posts and bottom tension wire with tie wire at maximum 15 inches on centers.

5. Fasten fabric to rails, braces and line posts with wire ties maximum 12 inches on centers. Weave tie through fabric, around post and twist minimum three turns. Cut off wire ends.

6. Install bottom tension wire stretched taut between terminal posts.

7. Attach fabric to terminal posts and gate frames with tension bars and tension bar bands or clips, spaced maximum 12 inches on center. Extend tension bar full height of fabric.

F. Install bottom tension wire stretched taut between terminal posts.

3.4 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/8 inch.

B. Maximum Offset From True Position: 3/8 inch.

C. Components shall not infringe adjacent property lines.

END OF SECTION

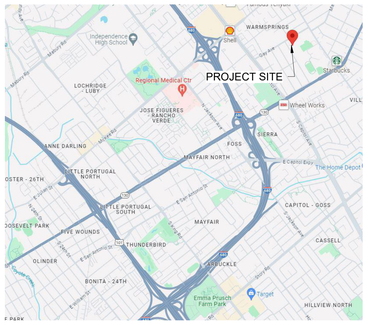
ALUM ROCK UNION SCHOOL DISTRICT

SERVER ROOM HVAC UPGRADES

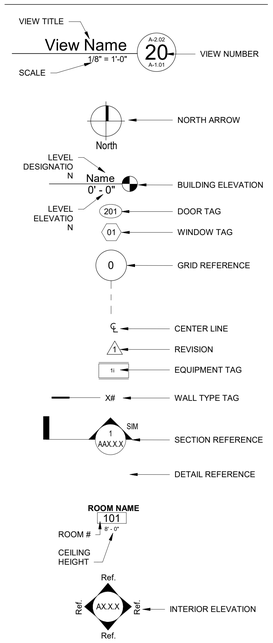
ABBREVIATIONS

ABV	ABOVE
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECT
B.O.	BOTTOM OF
BALC	BALCONY
BD	BOARD
BET	BETWEEN
BLDG	BUILDNG
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BRKT	BRACKET
BULKHD	BULKHEAD
BUR	BUILT UP ROOF
C.G.	CORNER GUARD
CAB	CABINET
CALK	CAULKING
CEM	CEMENT
CER	CERAMIC
CJ	CONTROL JOINT
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CO	CASED OPENING
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DR	DOOR
DS	DOWN SPOUT
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
ELEC	ELECTRIC
ELEV	ELEVATION
EMER	EMERGENCY
ENCL	ENCLOSURE
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EW	EACH WAY
EXP. JT.	EXPANSION JOINT
EXST	EXISTING
F.F.	FINISHED FACE
F.O.	FACE OF
FA	FIRE ALARM
FAP	FIRE ANNUNCIATOR PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER PANEL
FG	FINISH GROUP
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FLR	FLOOR
FLUOR	FLOURESCENT
FMF	FLEXIBLE MEMBRANE FLASHING
FT	FOOT OR FEET
FUR	FURRING
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GL	GLASS
GND	GROUND
GWB	GYPSUM BOARD
GYP	GYPSUM
H.W.H.	HOT WATER HEATER
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
ID	INNER DIAMETER
INCAN	INCANDESCENT
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUNDS
LDG	LANDING
LT	LIGHT
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O.P.	OVERFLOW PIPE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
PART	PARTITION
PERM	PERIMETER
PG	PAINT GRADE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PR	PAIR
PT	PAINT
PTD	PAINTED
R	RISER
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE	REFER
REF	REFRIGERATOR
REINF	REINFORCED
REQD	REQUIRED
RESIL	RESILIENT
RF DK	ROOF DECK
RM	ROOM
RO	ROUGH OPENING
RTU	ROOF TOP UNIT (MECH)
S	SOUTH
S.S.D.	SEE STRUCTURAL DRAWINGS
S.T.S.	SELF TAPPING SCREW
SAFB	SOUND ATTENUATION FIBER BATT
SC	SCUPPER
SCHED	SCHEDULE
SEAL	SEALANT
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUPSPENDED
SYM	SYMMMETRICAL
T	TREAD
T&G	TONGUE & GROOVE
TEL	TELEPHONE
TER	TERRAZZO
THK	THICK
THR	THRESHOLD
TO	TOP OF
TYP	TYPICAL
UC	UNDERCUT
UNFIN	UNFINISHED
UNO	ULNESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VTR	VENT TERMINATION PIPE
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATERCLOSET
WIN	WINDOW
WP	WATERPROOF
WS	WETSTACK
WSCT	WAINSCOT
WT	WEIGHT

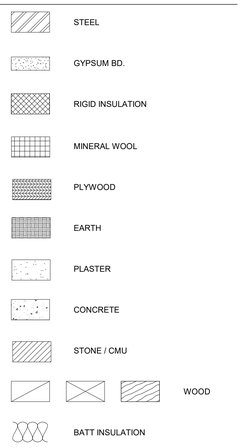
VICINITY MAP



STRUCTURAL NOTES



MATERIALS



INDEX - SHEET LIST		
SHEET NUMBER	SHEET NAME	100% CD
01 - General		
G0.0	COVER SHEET	●
31 - Architectural		
A2.0	DETAILS	●
A6.0	ENLARGED FLOOR PLAN	●
40 - Structural		
S0.0.1	GENERAL NOTES & SPECIAL INSPECTIONS AND TESTING	●
S1.0.1	FOUNDATION PLAN - SERVER ROOM	●
50 - Mechanical		
M0.0.1	MECHANICAL NOTES, LEGEND, AND SCHEDULES	●
M0.0.2	MECHANICAL DETAILS	●
M1.0.0	MECHANICAL SITE PLAN	●
M1.0.1	MECHANICAL FLOOR PLAN	●
60 - Plumbing		
P0.0.1	PLUMBING NOTES, LEGEND, AND SCHEDULES	●
P1.0.0	PLUMBING SITE PLAN	●
P1.0.1	PLUMBING FLOOR PLAN	●
70 - Electrical		
E0.0.1	ELECTRICAL SYMBOL LEGEND, NOTES & ABBREVIATIONS	●
E0.0.2	ELECTRICAL DETAILS	●
E1.0.0	ELECTRICAL SITE PLAN	●
E1.0.1	ELECTRICAL FLOOR PLANS	●
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES	●

PARTIAL LIST OF APPLICABLE CODES

CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH:

2022 CALIFORNIA ADMINISTRATIVE CODE, C.C.R., TITLE 24, PART 1.

2022 CALIFORNIA BUILDING CODE (CBC), - C.C.R., TITLE 24, PART 2.
(2021 INTERNATIONAL BUILDING CODE, VOLUMES 1-2, & 2022 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ELECTRICAL CODE (CEC), - C.C.R., TITLE 24, PART 3.
(2017 NFPA 70, NATIONAL ELECTRICAL CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA MECHANICAL CODE (CMC), - C.C.R., TITLE 24, PART 4.
(2021 MECHANICAL CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA PLUMBING CODE (CPC), - C.C.R., TITLE 24, PART 5.
(2021 INTERNATIONAL PLUMBING CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ENERGY CODE (CEC), - C.C.R., TITLE 24, PART 6.

2022 CALIFORNIA FIRE CODE, C.C.R., TITLE 24, PART 9.
(2021 INTERNATIONAL FIRE CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA REFERENCED STANDARDS, C.C.R., TITLE 24, PART 12.

C.C.R., PUBLIC SAFETY CODE, TITLE 19, DIVISION 1, STATE FIRE MARSHAL REGULATIONS

NOTES:
1. WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THESE CODES, INCLUDING REFERENCED STANDARDS WITHIN, AND APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED SUCH REQUIREMENTS, WITHOUT VIOLATING SUCH CODES, REGULATIONS AND ORDINANCES, CONTRACT DOCUMENTS TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS	2022 EDITION
NFPA 14	INSTALLATION OF STANDPIPE AND HOSE SYSTEMS	2019 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION
NFPA 17a	WET CHEMICAL EXTINGUISHER SYSTEMS	2021 EDITION
NFPA 20	INSTL. OF STATIONARY PUMPS FOR FIRE PROTECT.	2019 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE (CA AMENDED) UL STD 1971 FOR VISUAL DEVICES	2022 EDITION
NFPA 80	FIRE DOOR AND OTHER OPENING PROTECTIVES	2019 EDITION
NFPA 92	STANDARD FOR SMOKE CONTROL SYSTEM	2018 EDITION
UL 464	AUDIBLE SIGNAL APPLIANCES	2003 EDITION
UL 521	HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS	1999 EDITION
	ADA STANDARDS FOR ACCESSIBLE DESIGN	2010

REFERENCE CODE SECTION FOR NFPA STANDARDS - 2022 CBC (SFM) CHAPTER 35
SEE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS

PROJECT SCOPE

DESCRIPTION OF OVERALL SCOPE OF WORK

THIS PROJECT IS LOCATED AT THE ALUM ROCK UNION SCHOOL DISTRICT OFFICE IN SAN JOSE, CA. THE COMPLETE SCOPE OF WORK INCLUDES THE FOLLOWING.

1. HVAC REPLACEMENT AND ASSOCIATED ELECTRICAL UPGRADE RELATED TO SERVER ROOM
2. PATCH AND REPAIRS AND ANCHORAGE RELATED TO SERVER ROOM.

STATEMENT OF GENERAL CONFORMANCE

THE DRAWINGS AND/OR SPECIFICATIONS AND/OR CALCULATIONS FOR THE ITEMS LISTED IN THE SHEET INDEX HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1) DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS;

2) COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344 OF TITLE 24, PART 1 (TITLE 24, PART 1, SECTION 4-317(B))

01/03/24
SIGNATURE OF THE ARCHITECT — DATE
CHRIS VICENCIO, PARTNER, JK ARCHITECTURE

C26985 — 6/25/30
LICENSE NUMBER — EXPIRATION

PROJECT INFORMATION

PROJECT NAME:	ALUM ROCK USD SERVER ROOM HVAC UPGRADES
PROJECT ADDRESS:	2930 GAY AVE SAN JOSE, CA, 95127

PROJECT TEAM

CLIENT:
ALUM ROCK UNION ELEMENTARY SCHOOL DISTRICT
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TITLE BONDS DIRECTOR
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EMAIL Marc.freitas@arusd.org

ARCHITECT:
JK ARCHITECTURE ENGINEERING
CONTACT CHRIS VICENCIO
TITLE PARTNER, ARCHITECT OF RECORD
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CONTACT BRIAN WIENS
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MECH/PLUMB ENGINEER:
LP CONSULTING ENGINEERS
CONTACT RYAN ENNIS
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EMAIL rennis@lpengineers.com

ELECTRICAL ENGINEER:
LP CONSULTING ENGINEERS
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TITLE ENGINEER
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PHONE (916) 721-2923
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JK ARCHITECTURE ENGINEERING
AUBURN | TAHOE CITY | RENO | SAN JOSE
WWW.JKAEDESIGN.COM

SEAL



Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
COVER SHEET

Drawn By
VJ
Checked By
HV

NO.	DATE	ISSUE

Project No.
23-525
@Date
01/03/24

DRAWING NO.
G0.0

Autodesk Docs://23-525 Server Room Upgrades/23-525_Server Room Upgrades.rvt
1/4/2024 10:47:19 AM



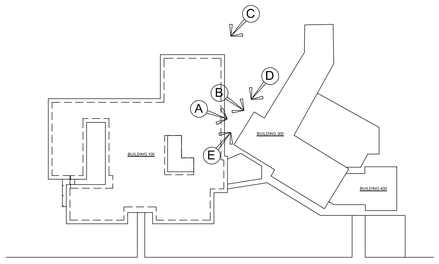
A SERVER ROOM WEST WALL



B SERVER ROOM WEST WALL



C CORNER ROOF EAVE



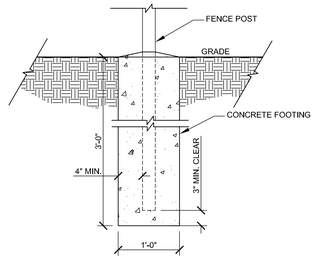


D FLOOR VIEW

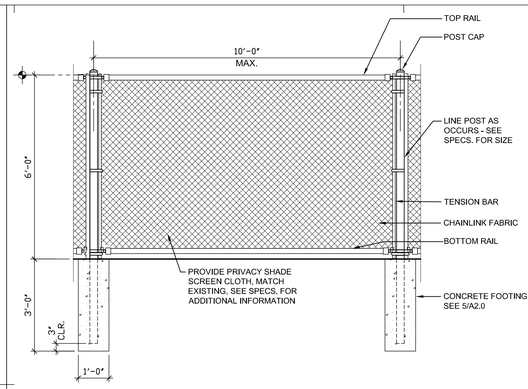


E SERVER ROOM WEST WALL

15 REFERENCE PHOTOS
N.T.S.



FENCE POST FOOTING
SCALE: 1" = 1'-0"
5



CHAIN LINK FENCE
N.T.S.
1

JK ARCHITECTURE ENGINEERING
AUBURN | TAHOE CITY | RENO | SAN JOSE
www.jkaedesign.com

SEAL

LICENSED ARCHITECT
CHRISTOPHER C. HOPPER
NO. C26985
REN. 6-30-25
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
DETAILS

NO.	DATE	ISSUE

Drawn By: VJ
Checked By: HV
Project No.: 23-525
©Date: 01/03/2024
Drawing No.: A2.0

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DEMOLITION PLAN GENERAL NOTES

1. ALL MATERIAL INDICATED TO BE REMOVED IS TO BE DISPOSED OF OFF SITE IN A LEGAL MANNER, UNLESS INDICATED TO BE SALVAGED OR REINSTALLED.
2. CONTRACTOR SHALL PROTECT PORTIONS OF EXISTING CONSTRUCTION NOT INDICATED TO BE DEMOLISHED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT AND REPAIR OF ITEMS TO REMAIN. CONTRACTOR SHALL FIELD INSPECT ALL EXISTING CONDITIONS WHICH MAY REMAIN. IDENTIFY ANY DAMAGED CONDITIONS AND PROVIDE PATCHING AND REPAIR AS REQUIRED.
3. REFER TO OTHER PLANS FOR ADDITIONAL DEMOLITION WORK.
4. REMOVE ALL EXPOSED PIPING, CONDUIT, AND FIXTURES THAT ARE NOT USED, ABANDONED, OR REPLACED WITH NEW WORK AS A PART OF THIS PROJECT.
5. REFER TO FLOOR PLANS FOR PATCHING AND REINSTALLATION OF EXISTING CONSTRUCTION.
6. DEMOLITION PLAN IS DIAGRAMMATIC. CONTRACTOR SHALL REMOVE EXTENT REQUIRED FOR THE INSTALLATION OF NEW BUILDING SYSTEMS AND NEW CONSTRUCTION WORK. PATCH AND REPAIR ALL CONSTRUCTION TO MATCH EXISTING OR TO RECEIVE NEW WORK/FINISHES. CONTRACTOR IS TO DETERMINE THE EXTENT OF DEMO REQUIRED. SCOPE OF DEMO EXCEEDS THE SPECIFIC WORK SHOWN OR NOTED ON THIS SHEET.
7. REMOVE ANY NON-STRUCTURAL EXPOSED METAL FASTENERS OR WHERE FASTENERS ARE EXPOSED BY DEMOLITION, TYPICAL THROUGHOUT THE ENTIRE BUILDING INTERIOR.
8. CLEAN AND PREPARE ALL EXISTING SURFACES TO RECEIVE NEW WORK.

DEMOLITION PLAN KEYNOTES

02.01 (E) CHAIN LINK FENCE TO REMAIN.
02.02 (E) FENCE END POST.
02.03 (E) CHAIN LINK FENCE TO BE DEMOLISHED UP TO THIS END POST LOCATION.
02.04 EDGE OF (E) BUILDING.
02.05 (E) CHAIN-LINK FENCING BEYOND.

03.01 EXISTING CONCRETE SLAB TO REMAIN.
03.02 EXISTING CONCRETE SLAB EDGE.

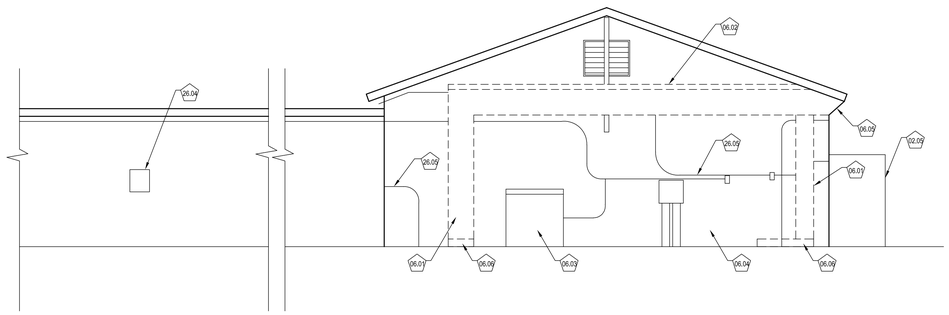
05.01 (E) OVERHEAD PIPE TRAPEZE SUPPORTS TO BE REUSED FOR NEW PIPING, SEE MECHANICAL FOR ADDITIONAL INFORMATION.

06.01 REMOVE (E) VERTICAL WOOD CHASE FURRING AS REQUIRED FOR NEW WORK.
06.02 REMOVE EXISTING WOOD FURRED PIPE CHASE ON WALL ABOVE, SEE EXT ELEVATION.
06.03 (E) EQUIPMENT ENCLOSURE TO REMAIN, NOT ASSOCIATED WITH THE SERVER ROOM, PROTECT AS REQUIRED.
06.04 (E) HORIZONTAL WOOD SIDING AT EXTERIOR WALL.
06.05 REMOVE (E) WOOD CHASE FURRING ALONG NORTH EAVE AS REQUIRED FOR NEW WORK.
06.06 REMOVE EXISTING WOOD CHASE FURRING ALONG FLOOR SLAB AS REQUIRED FOR NEW WORK.

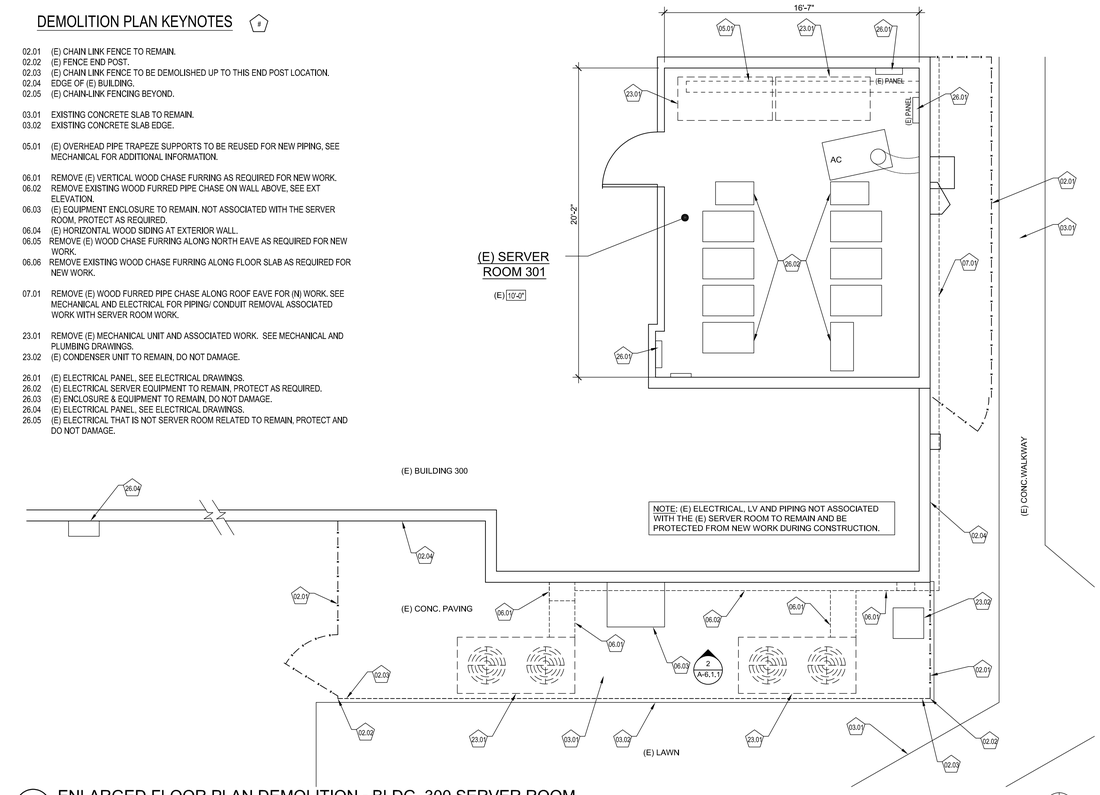
07.01 REMOVE (E) WOOD FURRED PIPE CHASE ALONG ROOF EAVE FOR (N) WORK. SEE MECHANICAL AND ELECTRICAL FOR PIPING/ CONDUIT REMOVAL ASSOCIATED WORK WITH SERVER ROOM WORK.

23.01 REMOVE (E) MECHANICAL UNIT AND ASSOCIATED WORK. SEE MECHANICAL AND PLUMBING DRAWINGS.
23.02 (E) CONDENSER UNIT TO REMAIN, DO NOT DAMAGE.

26.01 (E) ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS.
26.02 (E) ELECTRICAL SERVER EQUIPMENT TO REMAIN, PROTECT AS REQUIRED.
26.03 (E) ENCLOSURE & EQUIPMENT TO REMAIN, DO NOT DAMAGE.
26.04 (E) ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS.
26.05 (E) ELECTRICAL THAT IS NOT SERVER ROOM RELATED TO REMAIN, PROTECT AND DO NOT DAMAGE.



4 EXTERIOR ELEVATION DEMOLITION - WEST - BLDG. 300 SERVER ROOM
1/4" = 1'-0"



3 ENLARGED FLOOR PLAN DEMOLITION - BLDG. 300 SERVER ROOM
1/4" = 1'-0"

PAINT COLORS ARE AS FOLLOWS:

WALL: EP-1 - WIND WEAVER (KM4990-1 FLAT)

FLOOR PLAN GENERAL NOTES

1. MODIFY EXISTING PLUMBING PIPING AS REQUIRED TO ACCOMMODATE THE NEW WORK.
2. REFER TO AND COORDINATE WITH ELECTRICAL, PLUMBING AND MECHANICAL DRAWINGS FOR ADDITIONAL SCOPE OF WORK AS APPLICABLE.
3. ALL INTERIOR SURFACES IN THE AREA OF WORK ARE TO BE PATCHED OR REPAIRED TO MATCH (E) MATERIALS TO ACCOMMODATE THE WORK.
4. ALL (E) SYSTEMS ARE TO BE FULLY OPERATIONAL AT COMPLETION OF PROJECT. NOTIFY ARCHITECT OF ANY (E) SYSTEMS WHICH ARE NOT FUNCTIONAL PRIOR TO COMMENCING WORK.
5. CONTRACTOR TO PROTECT ALL EXISTING ITEMS TO REMAIN. APPLY AND MAINTAIN PROTECTIVE PLASTIC SHEETING OR OTHER ACCEPTABLE AND SAFE FORMS OF PROTECTION ON ALL SURFACES TO REMAIN.

FLOOR PLAN KEY NOTES

2.01 CHAIN LINK FENCE. SEE DETAIL 1/A2.0. ADD PRIVACY MESH TO MATCH EXISTING.

3.01 EXISTING CURB TO REMAIN.

5.01 METAL ENCLOSURE PANEL ON WALL, SEE MECHANICAL DRAWINGS.
5.02 METAL ENCLOSURE PANEL ON FLOOR, SEE MECHANICAL DRAWINGS.
5.03 (E) OVERHEAD PIPE TRAPEZE SUPPORTS TO BE REUSED FOR NEW PIPING, SEE MECHANICAL FOR ADDITIONAL INFORMATION.
5.04 INSTALL A METAL ENCLOSURE PANEL ALONG NORTH EAVE TO REPLACE THE EXISTING WOOD CHASE FURRING.

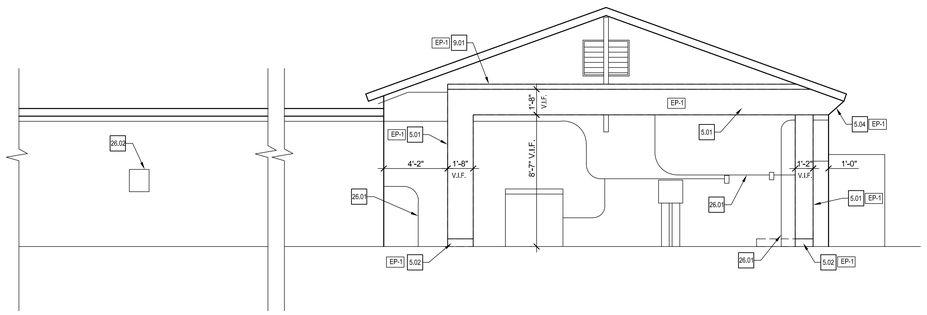
6.01 (E) EQUIPMENT ENCLOSURE TO REMAIN, NOT ASSOCIATED WITH THE SERVER ROOM, PROTECT AS REQUIRED.

7.01 PIPE CHASE/ ENCLOSURE ALONG ROOF EAVE, SEE MECHANICAL DRAWINGS

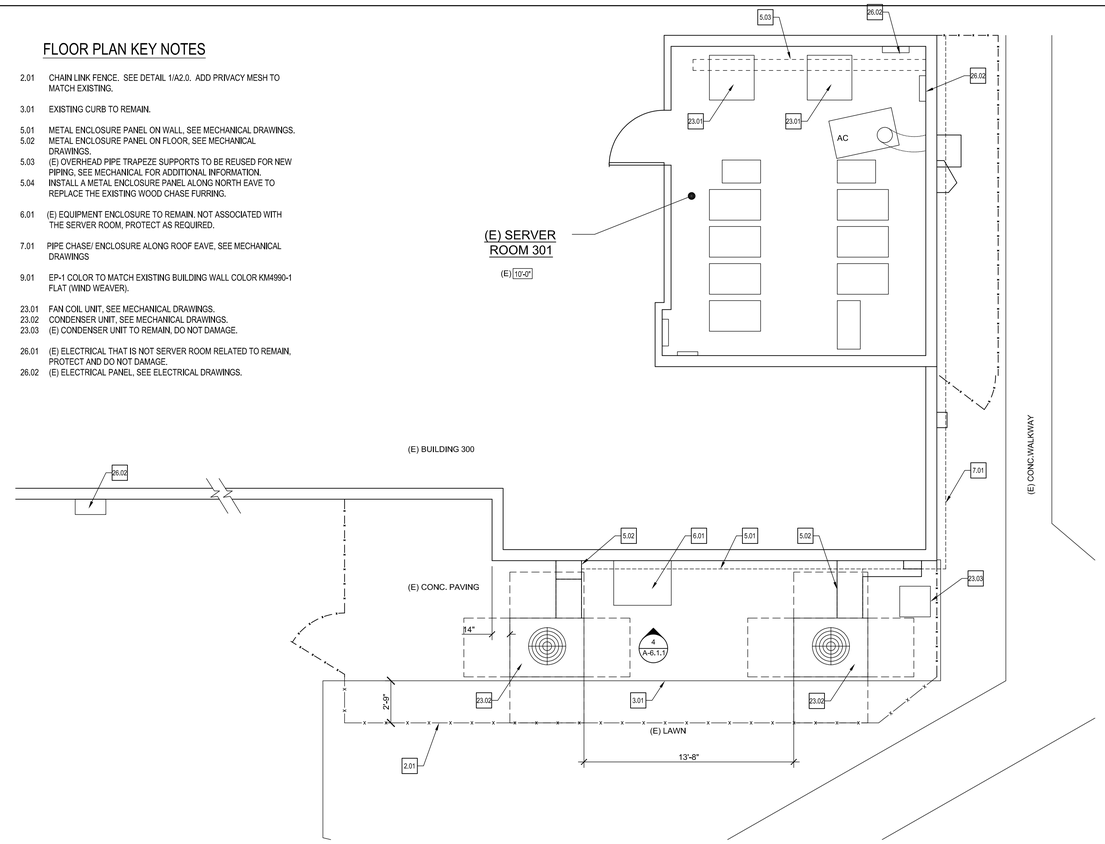
9.01 EP-1 COLOR TO MATCH EXISTING BUILDING WALL COLOR KM4990-1 FLAT (WIND WEAVER).

23.01 FAN COIL UNIT, SEE MECHANICAL DRAWINGS.
23.02 CONDENSER UNIT, SEE MECHANICAL DRAWINGS.
23.03 (E) CONDENSER UNIT TO REMAIN, DO NOT DAMAGE.

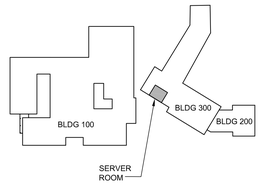
26.01 (E) ELECTRICAL THAT IS NOT SERVER ROOM RELATED TO REMAIN, PROTECT AND DO NOT DAMAGE.
26.02 (E) ELECTRICAL PANEL, SEE ELECTRICAL DRAWINGS.



2 EXTERIOR ELEVATION - WEST - BLDG. 300 SERVER ROOM
1/4" = 1'-0"



1 ENLARGED FLOOR PLAN - BLDG. 300 SERVER ROOM
1/4" = 1'-0"



KEY PLAN

SEAL

LICENSED ARCHITECT
CHRISTOPHER C. IVERSEN
NO. C26985
REN. 6-30-25
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ENLARGED FLOOR PLAN

NO.	DATE	ISSUE

Drawn By: VJ
Checked By: HV
Project No.: 23-525
Date: 01/03/2024
Drawing No.: A6.0

JK ARCHITECTURE ENGINEERING
AUBURN | TAHOE CITY | RENO | SAN JOSE
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GENERAL NOTES

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

GENERAL NOTES
1005N001

1. INTERPRETATION OF DRAWINGS & SPECIFICATIONS
   A. WHERE SPECIFICATIONS HAVE BEEN PREPARED FOR THIS PROJECT, THEY ARE ARRANGED IN SEVERAL SECTIONS, BUT SUCH SEPARATION SHALL NOT BE CONSIDERED AS THE LIMITS OF THE WORK REQUIRED OF ANY SEPARATE TRADE. THE TERMS AND CONDITIONS OF SUCH LIMITATIONS ARE WHOLLY BETWEEN THE CONTRACTOR AND THEIR SUBCONTRACTORS.
   B. IN GENERAL, THE WORKING DETAILS WILL INDICATE DIMENSIONS, POSITION AND KIND OF CONSTRUCTION, AND THE SPECIFICATIONS, QUALITIES AND METHODS. ANY WORK INDICATED ON THE WORKING DETAILS AND NOT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, SHALL BE FURNISHED AS THOUGH FULLY SET FORTH IN BOTH. WORK NOT PARTICULARLY DETAILED, MARKED OR SPECIFIED, SHALL BE IDENTICAL OR SIMILAR TO LIKE CASES OF CONSTRUCTION THAT ARE DETAILED, MARKED OR SPECIFIED. IF CONFLICTS OCCUR ON DRAWINGS AND/OR SPECIFICATIONS, THE MOST EXPENSIVE MATERIALS OR METHODS WILL PREVAIL.
   C. SHOULD AN ERROR APPEAR IN THE WORKING DETAILS OR SPECIFICATIONS OR IN WORK DONE BY OTHERS AFFECTING THIS WORK, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AT ONCE AND IN WRITING. IF THE CONTRACTOR PROCEEDS WITH THE WORK SO AFFECTED WITHOUT HAVING GIVEN SUCH WRITTEN NOTICE AND WITHOUT RECEIVING THE NECESSARY APPROVAL, DECISION OR INSTRUCTIONS IN WRITING FROM THE OWNER, THEN THE CONTRACTOR SHALL HAVE NO VALID CLAIM AGAINST THE OWNER, FOR THE COST OF SO PROCEEDING AND SHALL MAKE GOOD ANY RESULTING DAMAGE OR DEFECT. NO VERBAL APPROVAL, DECISION, OR INSTRUCTION SHALL BE VALID OR BE THE BASIS FOR ANY CLAIM AGAINST THE OWNER, ITS OFFICERS, EMPLOYEES OR AGENTS. THE FOREGOING INCLUDES TYPICAL ERRORS IN THE SPECIFICATIONS OR NOTATIONAL ERRORS IN THE WORKING DETAILS WHERE THE INTERPRETATION IS DOUBTFUL OR WHERE THE ERROR IS SUFFICIENTLY APPARENT AS TO PLACE A REASONABLY PRUDENT CONTRACTOR ON NOTICE THAT, SHOULD THE CONTRACTOR ELECT TO PROCEED, THEY ARE DOING SO AT THEIR OWN RISK.
2. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS.
3. SHOP DRAWING NOTE:
   A. WHEN NOT ADDRESSED BY DIVISION 1 OF THE SPECIFICATIONS, SUBMITTALS SHALL BE ELECTRONIC PDF FORMAT.
   B. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE STRUCTURAL ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL THE CONTRACTOR INTENDS TO FURNISH AND INSTALL, AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS THE CONTRACTOR INTENDS TO USE ON A STAND ALONE SET OF DOCUMENTS. DUPLICATION OF DESIGN DOCUMENTS FOR THE PURPOSE OF SHOP DRAWINGS IS NOT ACCEPTABLE.
   C. PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER. SHOP DRAWING SUBMITTALS SHALL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, STRUCTURAL STEEL, REINFORCING STEEL, & GLUE-LAMINATED BEAMS.
   D. PRIOR TO SUBMISSION THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL STAMP SUBMITTALS AS BEING "REVIEWED FOR CONFORMANCE".
   E. SHOP DRAWING SUBMITTALS PROCESSED BY THE STRUCTURAL ENGINEER ARE NOT CHANGE ORDERS.
   F. ANY DETAIL ON THE SHOP DRAWINGS THAT DEVIATES FROM THE CONTRACT DOCUMENTS SHALL CLEARLY BE MARKED WITH THE NOTE "THIS IS A CHANGE".
   G. SHOP DRAWINGS OR CALCULATIONS SUBMITTED FOR REVIEW THAT REQUIRE RESUBMITTAL FOR RE-REVIEW SHALL BE BILLED HOURLY FOR SUCH TIME TO THE GENERAL CONTRACTOR. RE-REVIEW WILL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE GENERAL CONTRACTOR FOR ADDITIONAL ENGINEERING REVIEW SERVICES.
4. SAFETY NOTE:
   A. IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS, AS THEY APPLY TO THIS PROJECT, OF THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF CALIFORNIA LATEST EDITION, AND ALL OSHA REQUIREMENTS.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED. SHORING INDICATIONS (LOCATION, DIRECTION, DURATION, ETC.) ARE ONLY SHOWN ON THE STRUCTURAL DWGS WHEN REQUIRED TO IMPLEMENT THE DESIGN INTENT OF THE FINAL WORK PRODUCT. DETERMINATION WHETHER SHORING IS REQUIRED FOR TEMPORARY OR INTERMEDIATE CONDITIONS DURING CONSTRUCTION IS WHOLLY THE RESPONSIBILITY OF THE CONTRACTOR.
   C. THE OWNER AND THE STRUCTURAL ENGINEER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.
5. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS. SUCH NOTIFICATION SHALL BE GIVEN IN DUE TIME SO AS NOT TO AFFECT THE CONSTRUCTION SCHEDULE. IN CASE OF A CONFLICT BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS THE MORE RESTRICTIVE CONDITION SHALL TAKE PRECEDENCE UNLESS WRITTEN APPROVAL HAS BEEN GIVEN FOR THE LEAST RESTRICTIVE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PRIOR TO COMMENCING ANY WORK.
6. WHEN CONSTRUCTION ATTACHES TO OR IS WITHIN AN EXISTING BUILDING, A COMPLETE SET OF DRAWINGS OF THE EXISTING BUILDING SHALL BE KEPT ON THE JOB SITE. CONTRACTOR TO OBTAIN THESE DRAWINGS FROM THE OWNER (IF THEY ARE AVAILABLE).
7. CONTRACTOR SHALL PROVIDE AN ALLOWANCE EQUAL TO 2% OF THE BID FOR STRUCTURAL STEEL, MISC. IRON AND REINFORCING STEEL TO BE USED AT THE DISCRETION OF THE STRUCTURAL ENGINEER. UNUSED AMOUNT TO REVERT TO THE OWNER UPON COMPLETION OF THE JOB.
8. ANY SUBSTITUTIONS FOR STRUCTURAL MEMBERS, HARDWARE OR DETAILS SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER. SUCH REVIEW WILL BE BILLED ON A TIME AND MATERIALS BASIS TO THE GENERAL CONTRACTOR WITH NO GUARANTEE THAT THE SUBSTITUTION WILL BE ALLOWED.
9. DO NOT SCALE DRAWINGS. CONTACT THE ARCHITECT OR STRUCTURAL ENGINEER FOR ANY DIMENSIONS NOT SHOWN.

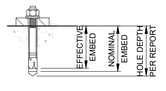
DESIGN CRITERIA
1005N002

1. CODES AND STANDARDS
   2022 CALIFORNIA BUILDING CODE (CBC)
   ASCE 7-16
   ACI 318-19
   AISI S100-16 w/ S2-20, S240-20, S400-20
   2018 NDS, 2021 SDPWS
2. VERTICAL LOADS
   ROOF LIVE LOAD = 20 PSF
   LIVE LOADS ARE REDUCED WHERE PERMITTED BY CODE.
3. LATERAL LOADS
   SEISMIC:
   SITE CLASS D (assumed)
   S_S = 1.94 ; S_{DS} = 1.552
   S_1 = 0.743 ; S_{D1} = N/A
   I_E = 1.0
   I_P = 1.0 TYPICAL
   RISK CATEGORY: II
   SEISMIC DESIGN CATEGORY: D
   WIND:
   V = 92 MPH
   RISK CATEGORY: D
   EXPOSURE CATEGORY: C
   GC_{PI} = ±0.18

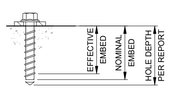
POST-INSTALLED ANCHORS
3005N001

1. FOR CONCRETE CONSTRUCTION, POST-INSTALLED ANCHORS SHALL BE ONE OF THE FOLLOWING:
   A. ADHESIVE ANCHORS FOR THRD ROD & REBAR:
      a. HILTI HIT-HY 200 V3 PER ESR-4868
      b. HILTI HIT-RE500 V3 PER ESR-3814
      c. SIMPSON SET-XP PER ESR-2508
      d. SIMPSON SET-3G PER ESR-4057
      e. DEWALT PURE 110+ ESR-3298
   B. EXPANSION ANCHORS:
      a. HILTI KB-CTZ2 PER ESR-4266
      b. SIMPSON STRONG BOLT 2 PER ESR-3037
      c. DEWALT POWER-STUD+ SD2, SD4 OR SD6 AS NOTED PER ESR-2502
   C. SCREW ANCHORS:
      a. HILTI KWIK HUS-EZ (KH-EZ) PER ESR-3027
      b. SIMPSON TITEN HD PER ESR-2713
      c. DEWALT SCREWBOLT+ PER ESR-3889
2. ANCHOR TYPE, SIZE & EMBEDMENT SHALL BE AS INDICATED IN DRAWINGS. POST-INSTALLED ANCHORS FOR REPAIR SHALL BE EVALUATED ON A CASE BY CASE BASIS. NOTIFY STRUCTURAL ENGINEER FOR REPAIRS.
3. ALL EMBEDMENT DEPTHS CALLED OUT IN DRAWINGS REFER TO EFFECTIVE EMBEDMENT UNLESS OTHERWISE NOTED. SEE DIAGRAM BELOW AND ICC REPORTS.
4. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN THE EVALUATION REPORT. PROVIDE MINIMUM EMBEDMENT PROVIDED IN ICC ESR REPORT UNLESS NOTED OTHERWISE.
5. PROVIDE SPECIAL INSPECTION AS INDICATED IN THE STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING AND THE EVALUATION REPORT.
6. WHEN INSTALLING POST-INSTALLED ANCHORS IN EXISTING CONCRETE OR MASONRY, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING BARS. DO NOT INSTALL ANCHORS WITHIN 1 1/2" OF CMU HEAD JOINTS. DO NOT INSTALL ANCHORS IN PRESTRESSED CONCRETE ELEMENTS.
7. THE CONCRETE SHALL HAVE ATTAINED ITS MINIMUM DESIGN STRENGTH PRIOR TO INSTALLATION OF THE ANCHORS.
8. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT THE TIME OF ANCHOR INSTALLATION PER ACI 318, CHAPTER 17.
9. INSTALLER CERTIFICATION AND INSPECTION IS REQUIRED FOR HORIZONTAL AND UPWARDLY INCLINED ADHESIVE ANCHORS SUBJECTED TO SUSTAINED TENSION LOADING IN ACCORDANCE WITH ACI 318, CHAPTER 17.
10. IF TEMPERATURE OF BASE MATERIAL AT TIME OF ADHESIVE ANCHOR INSTALLATION IS 45 DEGREES FARENHEIT OR LOWER, AN "ACRYLIC" OR COLD WEATHER ADHESIVE IS REQUIRED. USE DEWALT PE200+, SIMPSON AT-XP, OR HILTI HIT-HY200 WHEN THIS OCCURS.
11. THE INSPECTION OF THE ANCHORS SHALL BE DONE BY A QUALIFIED INSPECTION AGENCY AND A REPORT OF THE INSPECTION RESULTS SHALL BE SUBMITTED TO THE GOVERNING AGENCY AND ARCHITECT/STRUCTURAL ENGINEER.

INSTALLED ANCHOR DIAGRAMS



EXPANSION ANCHOR



SCREW ANCHOR

WOOD
6005N001

1. ALL STRUCTURAL WOOD SHALL CONFORM WITH THE FOLLOWING SPECIFICATIONS:
   SPECIES COMBINATION SHALL BE DOUG FIR - LARCH PER WCLIB GRADING RULES #17 OR WWPA STANDARD GRADING RULES FOR WESTERN LUMBER. DOUGLAS FIR – LARCH (NORTH) AND DOUGLAS FIR (SOUTH) ARE NOT PERMITTED WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
   2x, 3x AND 4x MEMBERS - #2 UNO.
   6x AND LARGER MEMBERS - #1 UNO.
   2x DECKING - SELECT DEX
   MEMBERS 3x AND LARGER SHALL BE FREE OF HEART CENTER
   REDWOOD - CALIFORNIA REDWOOD, RIS.
   SHEATHING - US PRODUCT STANDARD PS 1-09 AND PS2-10. APA RATED
   SHEATHING w/ EXTERIOR GLUE @ WALLS, FLOORS, & ROOFS UNO
   PRESSURE TREATED DOUGLAS FIR - TYPE AS APPROPRIATE FOR EXTERIOR ABOVE GROUND USE AS SPECIFIED, BY AWPA.
2. FIELD CUTS AND BOLT HOLES IN PRESSURE TREATED WOOD SHALL BE PROTECTED IN ACCORDANCE WITH AWPA STANDARD M4.
3. THE MOISTURE CONTENT OF 2x MATERIAL AT TIME OF INITIAL USE SHALL BE LESS THAN 19%. THE MOISTURE CONTENT OF LUMBER 3x AND LARGER AT TIME OF INITIAL USE SHALL BE LESS THAN 30% UNO.
4. HOLES FOR BOLTS IN WOOD SHALL BE BORED WITH A BIT OF THE SAME NOMINAL DIAMETER AS THE BOLT PLUS 1/16".
5. HOLES FOR LAG SCREWS SHALL BE FIRST BORED TO THE SAME DIAMETER AND DEPTH AS THE UNTHREADED SHANK. THE THREADED PORTION SHALL BE DRILLED TO 50% OF THE SHANK DIAMETER UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS.
6. LAG SCREWS AND WOOD SCREWS SHALL BE SCREWED AND NOT DRIVEN INTO PLACE. SOAP MAY BE USED TO LUBRICATE SCREWS.
7. ALL BOLTS, LAG SCREWS AND POST-INSTALLED ANCHORS SHALL BE PROVIDED WITH METAL WASHERS UNDER HEADS AND NUTS WHICH BEAR ON WOOD. STEEL WASHERS SHALL BE SIMPSON BP OR BPS TYPE (3" SQ MIN w/ STD CUT WASHER WHERE REQD BY CODE). MALLEABLE IRON (MI) WASHERS SHALL BE ROUND AND CAST. STANDARD FLAT WASHERS SHALL BE PER ANSI B18.22.1 TYPE A - WIDE PATTERN. FOR WASHERS AT SILL ANCHORS, SEE SCHEDULE:

SILL ANCHOR BOLT WASHER SCHEDULE				
WALL TYPE	2x4	2x6	2x8 & LARGER 1 SIDE SHTG	2x8 & LARGER 2 SIDES SHTG
WASHER DESIGNATION	BPS 5/8-3	BPS 5/8-6	BPS 5/8-6	3GA x 3" x STUD WIDTH - 1/2" w/ 11/16"Ø @ CL

13. ALL BOLTS AND LAG SCREWS SHALL BE TIGHTENED ON INSTALLATION AND RETIGHTENED BEFORE CLOSING IN OR AT COMPLETION OF JOB.
14. ALL BOLTS SHALL BE FULL NOMINAL DIMENSION AT UNTHREADED PORTION. NO UPSET THREADED BOLTS ALLOWED.
15. ALL FASTENERS, INCLUDING NUTS AND WASHERS, IN CONTACT w/ PRESERVATIVE-TREATED OR FIRE-RETARDANT MATERIAL SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL. BOLTS MAY BE HOT-DIPPED OR MECHANICALLY DEPOSITED ZINC-COATED STEEL. PLAIN CARBON STEEL FASTENERS ARE PERMITTED IN CONTACT w/ SBX/DOT OR ZINC BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT.
16. FRAMING HARDWARE SHOWN ON THE PLANS IS SIMPSON STRONG-TIE. USE FRAMING HARDWARE AS MANUFACTURED BY SIMPSON COMPANY OR EQUIVALENT. PRIOR TO INSTALLATION OF ANY NON-SIMPSON HARDWARE, THE CONTRACTOR SHALL SUBMIT A LIST OF ALL DETAIL REFERENCES WHERE A HARDWARE SUBSTITUTION IS PROPOSED, THE DESIGNATION FOR THE SIMPSON ITEM AND NON-SIMPSON PROPOSED EQUIVALENT AND AN ICC REPORT FOR EACH SUBSTITUTION ITEM.

STRUCTURAL SPECIAL INSPECTIONS AND TESTING

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING
1105N001

1. SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED BY A TESTING AND INSPECTION AGENCY, EMPLOYED BY THE OWNER (OR OWNER'S AUTHORIZED AGENT), AND APPROVED BY THE BUILDING OFFICIAL TO PROVIDE SPECIAL INSPECTIONS AND TESTING FOR THE PARTICULAR TYPE OF CONSTRUCTION.
2. TABLES OF SPECIAL INSPECTIONS AND TESTING ARE DERIVED FROM THE STRUCTURAL PROVISIONS OF THE CBC AND REFERENCED STANDARDS AND ARE FOR REFERENCE ONLY. THE INCLUDED TABLES ARE PROVIDED FOR THE CONVENIENCE OF THE OWNER, TESTING AGENCY AND CONTRACTOR IN DEVELOPING THE SCOPE OF WORK FOR REQUIRED TESTING AND INSPECTION OF STRUCTURAL MATERIALS AND COMPONENTS. FINAL DEFINITION OF THIS SCOPE OF WORK IS TO BE DETERMINED BY THE TESTING AGENCY AND THE OWNER (OR OWNER'S AUTHORIZED AGENT).
3. FREQUENCY OF SPECIAL INSPECTIONS AND TESTING SHALL BE, AT A MINIMUM, AS NOTED FOR THE INDIVIDUAL ELEMENTS WITHIN THE TABLES BELOW. THE CONTRACTOR SHALL COORDINATE TIMING OF SPECIAL INSPECTIONS AND TESTING WITH THE SPECIAL INSPECTION AND TESTING AGENCY.
4. PRIOR TO THE START OF CONSTRUCTION, THE TESTING AND INSPECTION AGENCY SHALL PROVIDE DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION, IN ACCORDANCE WITH CBC SECTION 1704.2.1.
5. THE TESTING AND INSPECTION AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER OF RECORD AND THE CONTRACTOR, PER CBC SECTION 1704.2.4. THE REPORTS SHALL INDICATE WHETHER WORK INSPECTED OR TESTED CONFORMED TO THE APPROVED CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.
6. SPECIAL INSPECTION AND TESTING RECORDS SHALL BE RETAINED BY THE CONTRACTOR ON SITE UNTIL COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT TO THE BUILDING OFFICIAL ACKNOWLEDGING RESPONSIBILITY FOR CONSTRUCTION OF THE MAIN LATERAL-FORCE RESISTING SYSTEM PRIOR TO COMMENCEMENT OF THAT WORK AS REQUIRED BY CBC SECTION 1704.4.
8. THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL SUBMIT TO THE BUILDING OFFICIAL, A FINAL REPORT DOCUMENTING SPECIAL INSPECTIONS AND TESTS PER CBC SECTION 1704.2.4, AND REPORTS AND CERTIFICATES PER CBC SECTION 1704.5.
9. ALL SOILS AND FOUNDATION EXCAVATION INSPECTIONS SHALL BE BY THE GEOTECHNICAL ENGINEER OF RECORD, OR A GEOTECHNICAL FIRM HIRED BY THE OWNER PER CBC SECTION 1705.6.
10. SPECIAL INSPECTION IS REQUIRED FOR ALL SHOP FABRICATED MEMBERS OR ASSEMBLIES UNLESS WAIVED PER THE EXCEPTIONS IN CBC SECTION 1704.2.5.
11. DEFINITIONS:
    a. CONTINUOUS - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS CONTINUOUSLY PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
    b. PERIODIC - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED.
    c. QUALITY ASSURANCE (QA) - MONITORING AND INSPECTION TASKS PERFORMED BY AN AGENCY OR FIRM OTHER THAN THE FABRICATOR OR ERECTOR TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED BY THE FABRICATOR AND ERECTOR MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. QUALITY ASSURANCE INCLUDES THOSE TASKS DESIGNATED 'SPECIAL INSPECTION' BY THE APPLICABLE CODE.
    d. QUALITY CONTROL (QC) - CONTROLS AND INSPECTIONS IMPLEMENTED BY THE FABRICATOR OR ERECTOR, AS APPLICABLE, TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
    e. OBSERVE (O) - OBSERVE THESE ITEMS ON A RANDOM BASIS (DAILY FOR LFRS). OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
    f. PERFORM (P) - PERFORM THOSE TASKS PRIOR TO FINAL ACCEPTANCE FOR EACH ITEM OR ELEMENT.
    g. DOCUMENT (D) - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE REPORT NEED NOT PROVIDE DETAILED MEASUREMENTS FOR JOINT FIT-UP, WPS SETTINGS, COMPLETED WELDS, OR OTHER INDIVIDUAL ITEMS LISTED IN THE TABLES. FOR SHOP FABRICATION, THE REPORT SHALL INDICATE THE PIECE MARK OF THE PIECE INSPECTED. FOR FIELD WORK, THE REPORT SHALL INDICATE THE REFERENCE GRID LINES AND FLOOR OR ELEVATION INSPECTED. WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND WHETHER THE NONCOMPLIANCE HAS BEEN SATISFACTORILY REPAIRED SHALL BE NOTED IN THE INSPECTION REPORT.
12. SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION ON THE WORK SHOWN IN THE CONSTRUCTION DOCUMENTS AS REQUIRED BY CBC CHAPTER 17. THE TABLES LISTED BELOW, AND THE JURISDICTION'S SPECIAL INSPECTION AND TESTING FORM. IF DISCREPANCIES ARE NOTED, CONTACT THE SEOR. ALL EXCEPTIONS INCLUDED IN CBC CHAPTER 17 ARE PERMITTED TO BE USED.
    - CONCRETE CONSTRUCTION (POST INSTALLED ANCHORS)

CONCRETE CONSTRUCTION - POST-INSTALLED ANCHORS
REQUIRED SPECIAL INSPECTIONS AND TESTS
CBC TABLE 1705.3
1105N302

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD
1. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. a,b			ACI 318: 17.8.2.4, 17.8.2
A. ADHESIVE ANCHORS INSTALLED HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	-	
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 1.A.	-	X	

A. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO COMMENCEMENT OF THE WORK.

B. SEE THE POST-INSTALLED ANCHOR NOTES FOR ADDITIONAL INFO.

ABBREVIATIONS
1005N003

(A) - OCCURS ABOVE
AB - ANCHOR BOLT
ABV - ABOVE
ADDL - ADDITIONAL
AHU - AIR HANDLING UNIT
ALT - ALTERNATE
APPROX - APPROXIMATE
ARCH - ARCHITECTURAL
(B) - OCCURS BELOW
BLDG - BUILDING
BLKG - BLOCKING
BLW - BELOW
BM - BEAM
B.O. - BOTTOM OF
BOF - BOTTOM OF FOOTING
BOTT - BOTTOM
BRCG - BRACING
BRG - BEARING
BTWN - BETWEEN
BYND - BEYOND
CC - CENTER TO CENTER
CG - CENTER OF GRAVITY
CJ - CONSTRUCTION JOINT
CJP - COMPLETE JOINT PENETRATION
CL - CENTERLINE
CLG - CEILING
CLR - CLEAR
CMU - CONCRETE MASONRY UNIT
COL - COLUMN
CONC - CONCRETE
CONN - CONNECTION
CONT - CONTINUOUS
CONTR - CONTRACTOR
COORD - COORDINATE
CSK - COUNTERSINK
DBL - DOUBLE
DF - DOUGLAS FIR
DIAG - DIAGONAL
DL - DEAD LOAD
DWG - DRAWING
(E) - EXISTING
EA - EACH
EF - EACH FACE OR EDGE FASTENER
EJ - EXPANSION JOINT
ELEV - ELEVATION
EN - EDGE NAILING
EOS - EDGE OF SLAB
EQ - EQUAL
EW - EACH WAY
FB - FACE OF BLOCK/BRICK OR FLAT BAR
FC - FACE OF CONCRETE
FDN - FOUNDATION
FF - FINISH FLOOR
FRMG - FRAMING
FRT - FIRE RETARDANT TREATED
FS - FACE OF STUD OR FAR SIDE
FTG - FOOTING
GA - GAUGE OR GAGE
GALV - GALVANIZED
GLB - GLUED LAMINATED BEAM
GR - GRADE
GYP - GYPSUM
HD - HOLDOWN
HDR - HEADER
HGR - HANGER
HK - HOOK
HORIZ - HORIZONTAL
HSB - HIGH STRENGTH BOLT
HSS - HOLLOW STRUCTURAL SECTION
HT - HEIGHT
JH - JOIST HANGER
LL - LIVE LOAD
LLH - LONG LEG HORIZONTAL
LLV - LONG LEG VERTICAL
LONGIT - LONGITUDINAL
LS - LAG SCREW
LW - LIGHTWEIGHT
MECH - MECHANICAL
MFR - MANUFACTURER
MI - MALLEABLE IRON
× - MARK
MTL - METAL
(N) - NEW
NIC - NOT IN CONTRACT
NS - NEAR SIDE
NTS - NOT TO SCALE
NW - NORMAL WEIGHT
OI - OVER
OH - OPPOSITE HAND
OPNG - OPENING
OSB - ORIENTED STRAND BOARD
PC - PIECE
PERP - PERPENDICULAR
PJP - PARTIAL JOINT PENETRATION
PL - PLATE
PT - PRESSURE TREATED
PW - PUDDLE WELD
REINF - REINFORCING OR REINFORCEMENT
REQD - REQUIRED
RWD - REDWOOD
SC - SLIP CRITICAL
SCH - SCHEDULE
SEOR - STRUCTURAL ENGINEER OF RECORD
SHTG - SHEATHING
SIM - SIMILAR
SJ - SLAB CONTROL JOINT
SMS - SHEET METAL SCREW
SOG - SLAB-ON-GRADE
SP - STRUCTURAL PANEL
SPCG - SPACING
SQ - SQUARE
STD - STANDARD
STFNR - STIFFENER
STGRD - STAGGERED
STL - STEEL
STRUCT - STRUCTURAL
SW - SHEAR WALL
T&B - TOP & BOTTOM
T&G - TONGUE & GROOVE
THRD - THREADED
TN - TOE NAIL
T.O. - TOP OF
TOC - TOP OF CONCRETE (SLAB UNO)
TOF - TOP OF FOOTING OR TOP OF FRAMING
TOS - TOP OF STEEL
TOW - TOP OF WALL
TRANS - TRANSVERSE
TYP - TYPICAL
UNO - UNLESS NOTED OTHERWISE
VERT - VERTICAL
VIF - VERIFY IN FIELD
WF - WIDE FLANGE
WHS - WELDED HEADED STUD
WP - WORK POINT
WS - WOOD SCREW
WWF - WELDED WIRE FABRIC
XS - EXTRA STRONG
XXS - DOUBLE EXTRA STRONG
Ø - ROUND OR DIAMETER

STRUCTURAL SHEET INDEX

S0.0.1	GENERAL NOTES & SPECIAL INSPECTIONS AND TESTING
S1.0.1	FOUNDATION PLAN - SERVER ROOM

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Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
GENERAL NOTES & SPECIAL INSPECTIONS AND TESTING

Drawn By

Checked By

Project No.
23-525

©Date
01/03/2024

Drawing No.
S0.0.1

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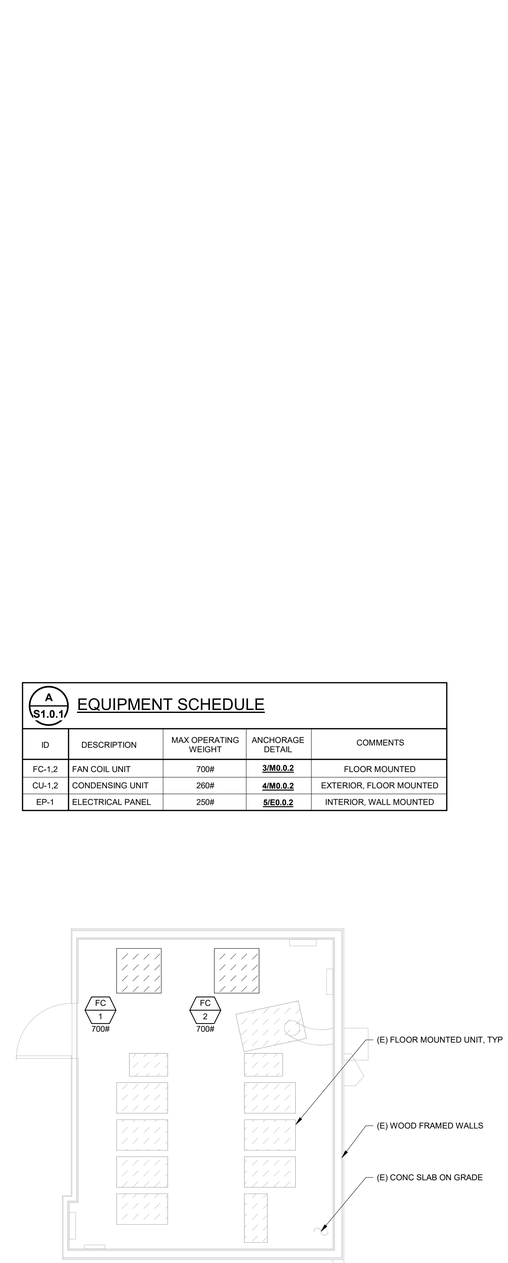
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EQUIPMENT SCHEDULE

(A / S1.0.1)

ID	DESCRIPTION	MAX OPERATING WEIGHT	ANCHORAGE DETAIL	COMMENTS
FC-1,2	FAN COIL UNIT	700#	3/M0.0.2	FLOOR MOUNTED
CU-1,2	CONDENSING UNIT	260#	4/M0.0.2	EXTERIOR, FLOOR MOUNTED
EP-1	ELECTRICAL PANEL	250#	5/E0.0.2	INTERIOR, WALL MOUNTED



FOUNDATION PLAN NOTES

1. NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS, UNO.
2. CONTRACTOR TO NOTIFY ARCHITECT IF EXISTING DAMAGE OR DETERIORATION OF EXISTING STRUCTURE IS ENCOUNTERED.
3. ALL ITEMS ARE EXISTING UNLESS SHOWN OTHERWISE AS NEW.

FOUNDATION PLAN LEGEND

MECHANICAL UNIT. SEE MECHANICAL UNIT SCHEDULE **A/S1.0.1** FOR WEIGHTS AND ATTACHMENT OF UNIT TO STRUCTURE.

XX / X / XX#

PARTIAL PLAN — FOUNDATION PLAN SERVER ROOM

(1 / S1.0.1) 1/4" = 1'-0" FOUNDATION PLAN - SERVER ROOM

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Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
FOUNDATION PLAN - SERVER ROOM

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01/03/2024

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COMPUTER ROOM AIR CONDITIONING UNIT (SPLIT DX) SCHEDULE (OFCI)

TYPE	MARK	NOM. TONS	UNIT ORIENT—ATION	ELECTRICAL					SUPPLY FAN				OSA	COOLING (DX)			HEATING (DX)		FILTER TYPE	OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
				VOLTS	PHASE	FLA	MCA	MOCP	MOTOR BHP	DRIVE	CFM	E.S.P. (IN WC)	MIN CFM	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	E.A. DB/WB (°F)	TOTAL CAP. (MBH)	AUX. HEAT (KW)				
CRAC	1	8.5	UPFLOW	208	3	42.9	50.8	80	3.95	DIRECT	4464	0.5	0	107	107	85/64.4	–	–	MERV–8	700	LIEBERT	PX029UA
CRAC	2	8.5	UPFLOW	208	3	42.9	50.8	80	3.95	DIRECT	4464	0.5	0	107	107	85/64.4	–	–	MERV–8	700	LIEBERT	PX029UA

NOTES:
1. LIEBERT UNITS TO BE OWNER FURNISHED, CONTRACTOR INSTALLED.
2. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
3. PROVIDE UNITS WITH LIEBERT INTELLIGENT COMMUNICATION AND MONITORING (iCOM) CONTROLS. CRAC–1 AND CRAC–2 TO BE CONNECTED FOR LEAD–LAG CONTROL. LEAD–LAG CONTROL PROGRAMMING TO BE PER LIEBERT FACTORY SETTING.
4. PROVIDE DUCT SMOKE DETECTOR IN THE SUPPLY PLENUM OF EACH UNIT TO SHUT–OFF UPON DETECTION OF SMOKE PER CMC 609.0. COORDINATE WITH ELECTRICAL AND FIRE ALARM CONTRACTOR FOR WIRING AND MONITORING.

COMPUTER ROOM CONDENSING UNIT (SPLIT DX) SCHEDULE (OFCI)

TYPE	MARK	NOM. TONS	ELECTRICAL					COOLING (DX)				OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
			VOLTS	PHASE	FLA	MCA	MOCP	SEER/ EER	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	AMBIENT DB (°F)			
CRCU	1	8.5	208	3	2.3	2.9	15	–/–	107	107	95	260	LIEBERT	MCM040
CRCU	2	8.5	208	3	2.3	2.9	15	–/–	107	107	95	260	LIEBERT	MCM040

NOTES:
1. LIEBERT UNITS TO BE OWNER FURNISHED, CONTRACTOR INSTALLED.
2. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
3. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.

AIR DISTRIBUTION SCHEDULE

SYMBOL	TYPE	DESCRIPTION
A	SURFACE CEILING SUPPLY	STEEL MODULAR CORE SQUARE CEILING DIFFUSER WITH ADJUSTABLE DISCHARGE PATTERN. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 271FL.

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7–16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7–16 SECTION 13.3 AS DEFINED IN ASCE 7–16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTION 1617A.1.24 THROUGH 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE–APPROVED INSTALLATION GUIDE (E.G., HCAi OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☒ ☒ ☐ ☐ SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE–APPROVAL
☐ ☐ ☐ ☐ (OPM#) #0043–13.

MECHANICAL LEGEND

SYMBOL	ITEM	ABBR.
	SUPPLY AIR	SA
	RETURN AIR	RA
	EXHAUST AIR	EA
	OUTSIDE AIR	OSA
	TRANSFER AIR	TA
1 / M–1	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
AC–1	EQUIPMENT DESIGNATION UNIT ABBREVIATION NUMBER	
A 10x10–3 120, 70	GRILLE DESIGNATION NECK SIZE & BLOW (4 UON) FIRE DAMPER WHERE REQ'D CFM	
	ACOUSTIC LINED DUCT	L
	TURNING VANES	TV
	DUCT FLEXIBLE CONNECTION	
	DUCT RISER	
	DUCT DROP	
	RECTANGULAR TO ROUND FITTING	
	VOLUME CONTROL DAMPER	VD
FD	FIRE DAMPER W/ ACCESS	FD
FSD	FIRE SMOKE DAMPER W/ ACCESS	FSD
	OPPOSED BLADE DAMPER	OBD
	BACKDRAFT DAMPER	BDD
M	MOTORIZED DAMPER	
T	THERMOSTAT @ +48" AFF	T–STAT
S	SENSOR @ +48" AFF	
TC	TIMECLOCK @ +48" AFF	
TCP	TEMPERATURE CONTROL PANEL	TCP
SD	DUCT SMOKE DETECTOR	SD
	PIPE RISER/DROP	(R)/(D)
	ABOVE FINISHED FLOOR	AFF
	UNLESS OTHERWISE NOTED	UON
	TYPICAL	(TYP)
	BOTTOM OF DUCT	BOD
	BOTTOM OF PIPE	BOP
	AUTOMATIC AIR VENT	AAV
	MANUAL AIR VENT	MAV
	TEMP. CONTROL CONTRACTOR	TCC
	TEMPERATURE CONTROL VALVE	TCV
	COMBUSTION AIR	CA
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC
	HEATING HOT WATER SUPPLY	HHWS
	HEATING HOT WATER RETURN	HHWR
	2–WAY CONTROL VALVE	
	BACKFLOW PREVENTER	BFP
	BALL VALVE	
	BUTTERFLY VALVE	
	CAP	
	CHECK VALVE	
	AUTOMATIC BALANCE VALVE (B&G ULTRA SET)	ABV
	AUTOMATIC BALANCE VALVE (B&G CIRCUIT SETTER)	CBV
	CONTROL VALVE (2–WAY)	
	FLEX CONNECTOR	FC
	FLOW ARROW	
	GATE VALVE	
	PRESSURE GAUGE	
	PLUG VALVE	
	REDUCER	
	STRAINER	
TS	TEMPERATURE SENSOR	TS
	TEST PORT (PETE'S PLUG)	PP
	THERMOMETER	
	TRIPLE DUTY VALVE	

MECHANICAL SPECIFICATIONS

A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
A.1. 2022 CALIFORNIA BUILDING CODE
A.2. 2022 CALIFORNIA MECHANICAL CODE
A.3. 2022 CALIFORNIA PLUMBING CODE
A.4. 2022 CALIFORNIA ELECTRICAL CODE
A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS
A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS – TITLE 24
A.7. NATIONAL FIRE PROTECTION ASSOCIATION
A.8. CALIFORNIA STATE FIRE MARSHAL

B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.

C. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF MECHANICAL EQUIPMENT.

D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.

E. THE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.

F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, AIR FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.

G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.

H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS MECHANICAL CONTROL SYSTEM COMPONENTS, FIRE/SMOKE DAMPERS, SMOKE DETECTORS, ETC., OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.

I. CHECK ALL PIPE AND DUCTWORK FOR LEAKS AND EXCESSIVE AIR LOSS AND NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.

J. GALVANIZED STEEL DUCTS SHALL BE ASTM A 653/A 653M GALVANIZED STEEL SHEET, FORMING STEEL (FS) DESIGNATION, WITH G90/Z275 ZINC COATING.

K. FABRICATE, SUPPORT AND SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR 4" STATIC PRESSURE UPSTREAM OF TERMINAL UNITS (VAV, CAV BOXES) AND 2" STATIC PRESSURE DOWNSTREAM OF TERMINAL UNITS (VAV, CAV BOXES).

L. CONSTRUCT DUCTWORK T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1–1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION.

M. COMBINATION FIRE AND SMOKE DAMPERS SHALL MEET THE REQUIREMENTS OF NFPA 90A, UL 555, UL 555S, AND AS INDICATED. PROVIDE FACTORY SLEEVE AND COLLAR FOR EACH DAMPER.

N. ALL INSULATION AND LINER PRODUCTS SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, OR UL 723.

O. DUCT INSULATION BLANKET (INTERIOR APPLICATIONS):
O.1. INSULATION: ASTM C553; FLEXIBLE, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DUCT APPLICATION: 2" THICK, 3/4 LB. DENSITY.
O.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.02 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.

P. DUCT INSULATION BOARD (EXTERIOR APPLICATIONS):
P.1. INSULATION: ASTM C 612; RIGID, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F (0.036 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DENSITY: 3.0 LB/CU FT (48 KG/CU M).
P.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.04 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.
P.3. ALUMINUM JACKET: ASTM B 209 (ASTM B 209M). THICKNESS: 0.016 INCH (0.40 MM) SHEET. FINISH: SMOOTH. JOINING: LONGITUDINAL SLIP JOINTS AND 2 INCH (50 MM) LAPS. FITTINGS: 0.016 INCH (0.4 MM) THICK DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER. METAL JACKET BANDS: 3/8 INCH (10 MM) WIDE; 0.015 INCH (0.38 MM) THICK ALUMINUM.

Q. DUCT LINER:
Q.1. INSULATION: INCOMBUSTIBLE GLASS FIBER COMPLYING WITH ASTM C 1071; FLEXIBLE BLANKET; WITH ACRYLIC POLYMER SHOWN TO BE FUNGUS AND BACTERIA RESISTANT BY TESTING TO ASTM G 21 IMPREGNATED SURFACE AND EDGE COAT. APPARENT THERMAL CONDUCTIVITY: MAXIMUM OF 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C). DUCT APPLICATION: 1–1/2" THICK, 1–1/2 POUND DENSITY. SERVICE TEMPERATURE: UP TO 250 DEGREES F (121 DEGREES C). RATED VELOCITY ON COATED AIR SIDE FOR AIR EROSION: 5,000 FPM (25.4 M/S), MINIMUM.
Q.2. LINER FASTENERS: GALVANIZED STEEL, SHEET METAL WELD PINS OR CLINCH PINS AND WASHERS.

R. INSULATED FLEXIBLE DUCTS
R.1. FLEXIBLE DUCTS SHALL BE U.L. LISTED AND SHALL COMPLY WITH UMC STANDARD 6–1.
R.2. THE MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5 FEET PER CMC SECTION 603.4.1 DUCTWORK SHALL BE EXTENDED TO FULL LENGTH WHENEVER POSSIBLE WITHOUT SEVERE BENDS OR KINKS. BENDS SHALL BE MADE TO MAINTAIN R/W EQUAL TO 1.5.
R.3. BLACK POLYMER FILM SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE; FIBERGLASS INSULATION; POLYETHYLENE VAPOR BARRIER FILM.
R.3.1. PRESSURE RATING: 4 INCHES WG POSITIVE PRESSURE AND 1 INCH NEGATIVE PRESSURE.
R.3.2. INSULATION SHALL BE 1–1/2 INCH THICK FIBERGLASS.
R.3.3. MAXIMUM VELOCITY: 4000 FPM (20.3 M/SEC).
R.3.4. TEMPERATURE RANGE: –20 DEGREES F TO 175 DEGREES F (–28 DEGREES C TO 79 DEGREES C).

S. SEAL ALL STANDING SEAMS AND TRANSVERSE JOINTS IN ALL SHEETMETAL DUCTWORK WITH HARDCAST IRON GRIP PREMIUM FLEXIBLE WATER BASED DUCT SEALANT.

T. DURING CONSTRUCTION PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.

U. ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS WITH ACCESSIBLE LOCKING TYPE QUADRANT. WHERE DAMPER IS INACCESSIBLE, PROVIDE YOUNG REGULATOR MODEL 270–301 CABLE KIT WITH EITHER 830A–CC (RECTANGULAR) OR 5020–CC (ROUND) DAMPER.

V. PERFORM TOTAL SYSTEMS BALANCE IN ACCORDANCE WITH AABC, ASHRAE STD 111, OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.

W. THE INSTALLATION OF DUCT SMOKE DETECTORS FOR AUTOMATIC SHUTDOWN OF AIR MOVING SYSTEMS AS REQUIRED BY CMC SECTION 609 OR AS REQUIRED FOR THE OPERATION OF FIRE SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT'S STANDARD "FIRE PROTECTION DESIGN GUIDELINES FOR SMOKE CONTROL WITHIN BUILDINGS". WHERE AIR DUCT SMOKE DETECTORS SERVING AIR–MOVING SYSTEMS ARE INSTALLED WITHIN CONDCEALED SPACES, AND/OR DROP CEILING AREAS, THE DETECOR SHALL BE PROVIDED WITH THE UNIT SERVED. SAID REMOTE ALARM LED DEVICE SHALL BE LABELED TO CLEARLY IDENTIFY THE UNIT SERVED (AC–1, ETC.). WHERE AIR DUCT SMOKE DETECTORS SERVING AIR–MOVING SYSTEMS ARE INSTALLED IN CONCEALED SPACES, AND/OR DROP CEILING AREAS MORE THAN 10 FEET ABOVE THE FINISHED FLOOR, THE DETECTOR SHALL BE PROVIDED WITH A REMOTE TEST AND RESET SWITCH, SAID REMOTE TEST AND RESET SWITCH SHALL BE ATTACHED TO AN ADJACENT WALL OR STRUCTURAL COLUMN AT A MAXIMUM HEIGHT OF 6 FEET ABOVE FINISHED FLOOR. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT–OFF TEST WILL BE REQUIRED.

MECHANICAL SHEET INDEX

SHEET NO.	SHEET TITLE
M0.0.1	MECHANICAL NOTES, LEGEND AND SCHEDULES
M0.0.2	MECHANICAL DETAILS
M1.0.0	MECHANICAL SITE PLAN
M1.0.1	MECHANICAL FLOOR PLAN

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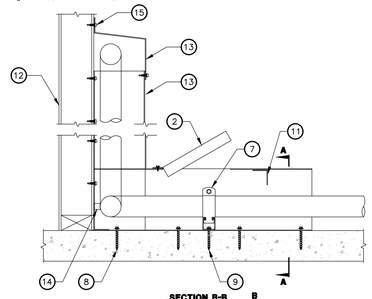
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MECHANICAL NOTES, LEGEND, AND SCHEDULES

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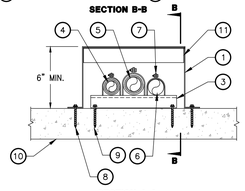
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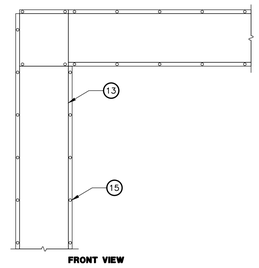
1. 14 GA GALVANIZED COVER PLATE ALL AROUND PIPING AND CONDUIT UP TO WALL PENETRATION
2. PROVIDE HINGED ACCESS IN GALVANIZED COVER PLATE FOR ANY CONCEALED ACCESSORIES
3. UNISTRUT P1000 CHANNEL, 4'-0" O.C. MAX.
4. REFRIGERANT LIQUID LINE PER MFGR'S REQUIREMENTS, TYP.
5. REFRIGERANT SUCTION LINE PER MFGR'S REQUIREMENTS, TYP.
6. CONTROL AND ELECTRICAL CONDUIT BY OTHERS, COORDINATE SPACE REQUIREMENTS, TYP.
7. PIPE CLAMP WITH INSULATION SHIELD
8. "TAPCON" CONCRETE SCREW WITH 1" EMBED. AT 8" O.C.
9. "TAPCON" CONCRETE SCREW WITH 1" EMBED, (2) PER CHANNEL
10. CONCRETE PAD
11. 2" x 2" x 1/8" ANGLE WELDED TO UNDERSIDE IF WIDTH EXCEEDS 18"
12. EXTERIOR WALL
13. SHEET METAL ENCLOSURE
14. UNISTRUT ATTACHMENT PIPE TO WALL
15. #12 SMS, 12" O.C. MIN, SILICONE SEAL PENETRATIONS



SECTION B-B



SECTION A-A

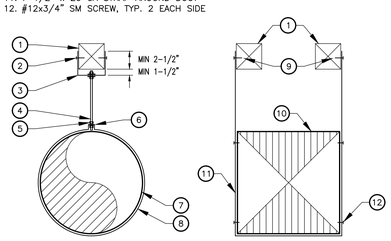


FRONT VIEW

MPSA08A

REFRIGERANT PIPE MOUNTING | NTS | 5

1. 4x4 BLOCKING BETWEEN JOISTS WITH U44 HANGERS AT EACH END, TYP.
2. #12x1-1/2" WOOD SCREWS, 2 PER SIDE
3. 3 WIDE x 16 GA BENT PLATE
4. 3/8"ø THREADED ROD
5. 3/8" NUT & 2" WASHER, TYP. TOP AND BOTTOM OF FLANGE
6. 2-1/2" WIDE X 20 GA STRAP WITH MIN. 3"x2" HIGH FLANGE, TYP.
7. ROUND DUCT
8. 2-1/2" x 20 GA STRAP
9. 1/4"ø x 1-1/4" LAG BOLT, TYP. 2 EACH END
10. RECTANGULAR DUCT
11. 1-1/2" x 20 GA STRAP AROUND DUCT
12. #12x3/4" SM SCREW, TYP. 2 EACH SIDE

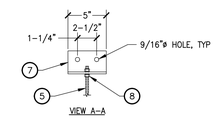


NOTE:
1. SUPPORT DUCTWORK AT 8'-0" O.C.
2. BLOCKING CONDITION IS SHOWN, 2x JOIST CONDITION IS SIMILAR WITH STRAPS AND LAG BOLTS ATTACHING DIRECTLY TO 2x ROOF JOISTS.
3. PER 2010 CBC, SEISMIC RESTRAIN IS NOT REQUIRED FOR RECTANGULAR DUCTS LESS THAN 6 SQ. FT. CROSS SECTION OR ROUND DUCTS LESS THAN 28"ø.

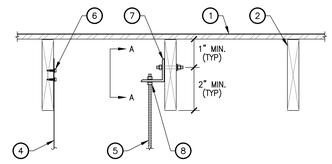
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TYPICAL DUCT SUPPORT DETAIL | NTS | 6

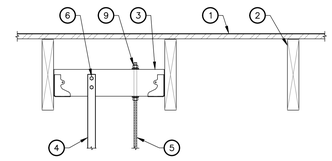
1. FLOOR/ROOF, SEE STRUCTURAL DRAWINGS
2. FLOOR/ROOF FRAMING, SEE STRUCTURAL DRAWINGS
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL
6. (2) #12 x 1" SMS, 2" O.C. MIN.
7. 3"x3"x1/4" x 5" LONG GALVANIZED STEEL ANGLE, ATTACH TO FRAMING WITH (2) 1/2"ø BOLTS OR THREADED ROD WITH NUTS AND WASHER
8. NUT, TOP AND BOTTOM
9. NUT AND WASHER, TOP AND BOTTOM



VIEW A-A



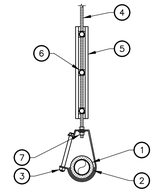
AT FRAMING MEMBERS



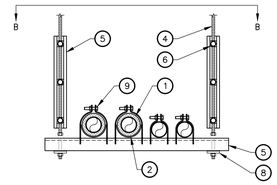
BETWEEN FRAMING MEMBERS

HANGER UPPER ATTACHMENTS (WOOD) | NTS | 1

1. PIPE, SEE PLAN FOR SIZE AND ROUTING
2. PIPE INSULATION WHERE APPLICABLE, SEE SPECIFICATIONS. PROVIDE INSULATION PROTECTION SADDLE, MIN. 12" LONG, B-LINE B3151 OR EQUAL. MAY BE SUBSTITUTED FOR PRE-INSULATED CALCIUM SILICATE SHIELD SUPPORT, B-LINE B338 OR EQUAL.
3. ADJUSTABLE 'J' PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3690 OR EQUAL
4. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL
5. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL
6. ROD STIFFENER, B-LINE MODEL 98B OR EQUAL, MIN. 1" FROM TOP AND BOTTOM OF UNISTRUT AND MAX. 28" O.C., TORQUE TO 10 FT-LBS
7. NUT AND WASHER, TOP AND BOTTOM
8. NUT, TOP AND BOTTOM WITH UNISTRUT SQUARE WASHER, B-LINE MODEL B201ZN OR EQUAL
9. PIPE CLAMP, B-LINE SERIES B2000 OR EQUAL



NON-SEISMIC SUPPORT

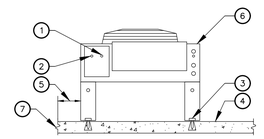


SEISMIC TRAPEZE SUPPORT

NOTES:
A. REUSE EXISTING PIPE HANGERS AND SUPPORTS WHERE POSSIBLE.
B. HANGER SPACING TO BE PER SPECIFICATIONS. MAXIMUM SPACING MAY NOT EXCEED 2022 CPC TABLE 313.3.
C. PROVIDE ROD STIFFENERS ONLY WHERE ROD LENGTH FROM SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18".

PIPE HANGER DETAIL | NTS | 2

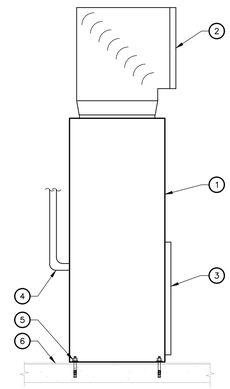
1. REFRIGERANT SUCTION LINE
2. REFRIGERANT SUPPLY LINE
3. 3/8"ø "HILTI" KB-TZ2 STAINLESS STEEL EXPANSION ANCHORS, 1-1/2" EFFECTIVE EMBEDMENT, ESR-4266. (TYP. 4). TORQUE TO 30 FT-LBS PER ICC ESR-4266, (1) AT EACH CORNER OF UNIT, (4) TOTAL
4. (E) CONCRETE SLAB ON GRADE.
5. MIN. 6" ALL AROUND UNIT.
6. CRCU UNIT – OFCI
7. EDGE OF CONCRETE



MCDSA02B

CONDENSING UNIT MOUNTING DETAIL | NTS | 4

1. COMPUTER ROOM FAN COIL, SEE SCHEDULES
2. SUPPLY AIR DISCHARGE FROM UNIT WITH MITERED ELBOW WITH TURNING VANES
3. UNIT FACTORY RETURN AIR OPENING
4. REFRIGERANT PIPING CONNECTIONS TO UNIT. PROVIDE INSULATION PER TITLE 24 REQUIREMENTS WITH PVC JACKETING WHERE EXPOSED INDOORS.
5. 3/8"ø HILTI KB-TZ2 EXPANSION ANCHOR WITH 1-1/2" EFFECTIVE EMBED., TORQUE TO 30 FT-LBS PER ICC ESR-4266, (1) AT EACH CORNER OF UNIT, (4) TOTAL THROUGH MANUFACTURER PROVIDED CORNER BRACKETS.
6. (E) CONCRETE SLAB ON GRADE.



NOTES:
1. INSTALL FAN COIL UNIT PER MANUFACTURER'S REQUIREMENTS.
2. COORDINATE CLEARANCES WITH EXISTING CONDITIONS AND SERVICE REQUIREMENTS.

COMPUTER ROOM FAN COIL MOUNTING | NTS | 3

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Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

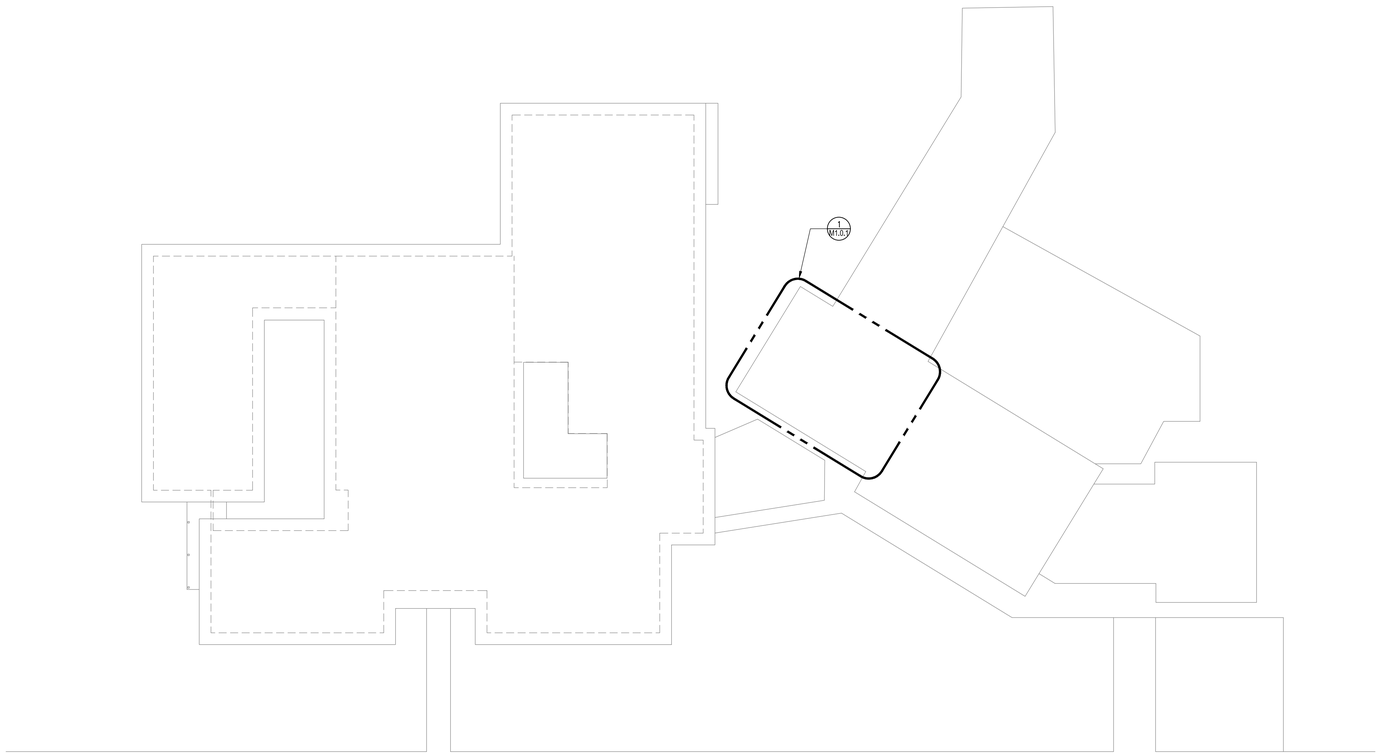
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GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

1 **MECHANICAL SITE PLAN**
SCALE: 1" = 20'

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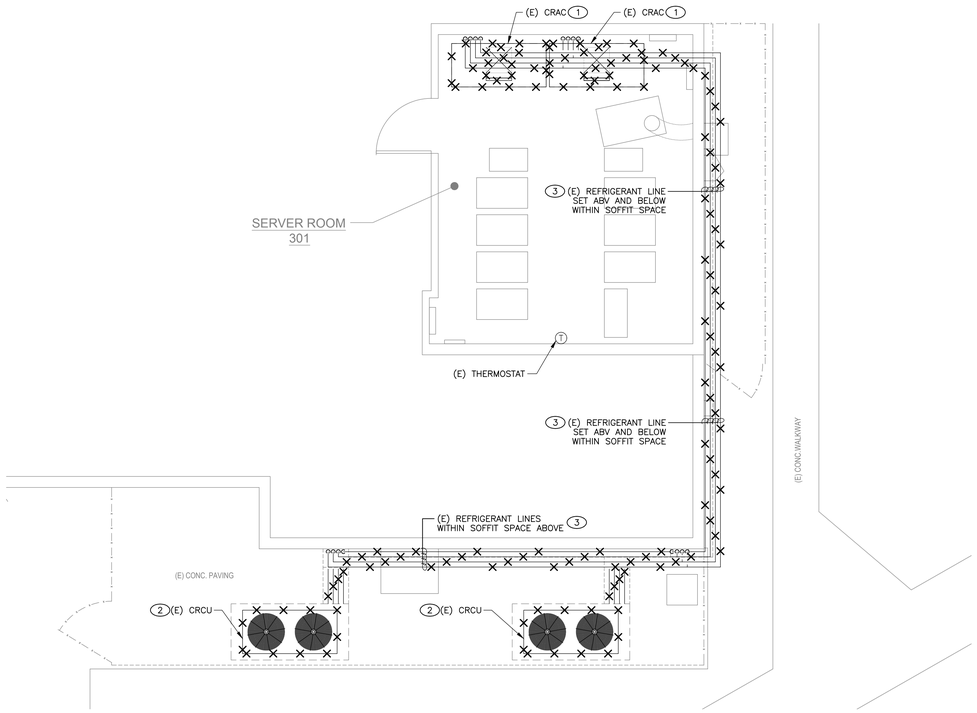
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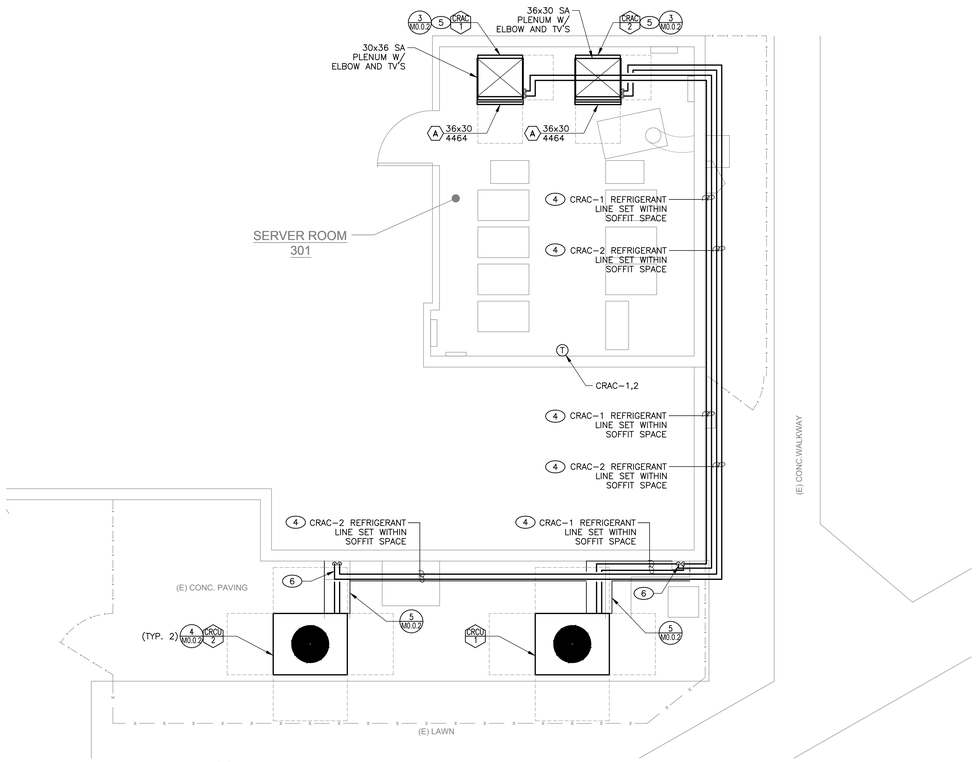
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1 MECHANICAL DEMO FLOOR PLAN - BLDG 300 SERVER ROOM

SCALE: 1/4" = 1'-0"



2 MECHANICAL FLOOR PLAN - BLDG 300 SERVER ROOM

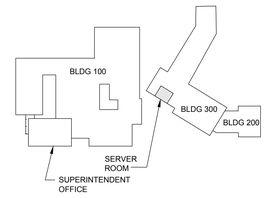
SCALE: 1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING COMPUTER ROOM FAN COIL AND RELATED DUCTWORK SHOWN HATCHED.
2. REMOVE EXISTING COMPUTER ROOM CONDENSING UNIT SHOWN HATCHED.
3. REMOVE EXISTING REFRIGERANT PIPING SHOWN HATCHED. PIPING TO BE REPLACED WITH NEW IN SAME LOCATION. FOLLOW EXISTING MOUNTING POINTS WITH NEW PIPING.
4. NEW REFRIGERANT PIPING FROM OUTDOOR CONDENSER TO INDOOR EVAPORATOR. INSTALL PER MANUFACTURER'S REQUIREMENTS. PIPING INSULATION TO BE PER TITLE 24 REQUIREMENTS.
5. INSTALL NEW COMPUTER ROOM FAN COIL UNIT ON FLOOR PER MANUFACTURER'S RECOMMENDATIONS. MAINTAIN MINIMUM REQUIRED CLEARANCES FOR SERVICING.
6. PROVIDE SHEET METAL COVER ON WALL TO PROTECT REFRIGERANT LINES AND EXISTING CONDUITS.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



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STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
MECHANICAL FLOOR PLAN

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23-525
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EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7–16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7–16 SECTION 13.3 AS DEFINED IN ASCE 7–16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24 THROUGH 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE–APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☐ ☐ ☒ ☐ SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE–APPROVAL
☐ ☐ ☐ ☐ (OPM#) #0043–13.

PLUMBING LEGEND

SYMBOL	ITEM	ABBR.
WC-1	FIXTURE DESIGNATION - UNIT ABBREVIATION - NUMBER	
1 P-1	DETAIL DESIGNATION - DETAIL NUMBER - SHEET NO. WHERE SHOWN	
-CW-	DOMESTIC COLD WATER	CW
-HW-	DOMESTIC HOT WATER	HW
	DOMESTIC HOT WATER SUPPLY	HWS
	DOMESTIC HOT WATER RETURN	HWR
-V-	VENT	V
G	GAS	G
MG	MEDIUM PRESSURE GAS	MG
LPG	LIQUID PROPANE GAS	LPG
S	SEWER	S
GW	GREASE WASTE	GW
OS	OIL/SAND WASTE	OS
AW	ACID WASTE	AW
SD	STORM DRAIN	SD
RD	ROOF DRAIN	RD
OD	OVERFLOW DRAIN	OD
C	CONDENSATE DRAIN	C
SCD	SECONDARY DRAIN	SCD
D	DRAIN	D
T&P	TEMPERATURE & PRESSURE RELIEF	T&P
FS	FIRE SPRINKLER	FS
	PIPE CAP	
	PIPE RISER/DROP	(R)/(D)
	SHUT–OFF VALVE IN BOX	SOV
FCO	FLOOR CLEANOUT	FCO
COTG	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	CLEANOUT	CO
	HOSE BIBB	HB
	OVERFLOW DRAIN OUTLET	
	BALL VALVE	BV
	GATE VALVE	GV
	CHECK VALVE	CHK.V
	MIXING VALVE	TMV
	SHUT–OFF COCK	SOC
	CIRCULATION PUMP	CP
	BALANCING VALVE	BLV
	TRAP PRIMER	TP
	TYPICAL	(TYP)
	VENT THRU ROOF	VTR
	UNDERGROUND	UG
	UNDER FLOOR	UF
	ABOVE CEILING	AB.C.
	TO ABOVE/BELOW	TA/TB
	FROM ABOVE/BELOW	FA/FB
	CONTINUATION	CONT.
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC

PLUMBING SPECIFICATIONS

A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
- A.1. 2022 CALIFORNIA BUILDING CODE
- A.2. 2022 CALIFORNIA MECHANICAL CODE
- A.3. 2022 CALIFORNIA PLUMBING CODE
- A.4. 2022 CALIFORNIA ELECTRICAL CODE
- A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS
- A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS – TITLE 24
- A.7. NATIONAL FIRE PROTECTION ASSOCIATION
- A.8. CALIFORNIA STATE FIRE MARSHAL

B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.

C. THE PLUMBING CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF PLUMBING EQUIPMENT.

D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.

E. THE LOCATIONS OF EQUIPMENT, PIPING, AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.

F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.

G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.

H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS PLUMBING COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.

I. CHECK ALL SYSTEMS FOR LEAKS. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.

J. BEFORE COMMENCING WORK CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS AND ENSURE THAT THESE CAN BE PROPERLY CONNECTED WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COSTS SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN.

K. COORDINATE ALL NEW OR CHANGING UTILITY SERVICES WITH UTILITY PROVIDER AS SOON AS POSSIBLE. ALL WORK PERFORMED NOT IN ACCORDANCE WITH THE UTILITY COMPANIES REQUIREMENTS PRIOR TO COORDINATING WITH THE UTILITY COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

L. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.

M. MAKE ALL CONNECTIONS TO EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER AS FAR AS TRAPS, DRAINS, FLEXIBLE CONNECTIONS, ETC. AND AS REQUIRED BY THE EQUIPMENT AND LOCATION.

N. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, FIXTURE MOUNTING HEIGHTS AND ADA ACCESSIBILITY REQUIREMENTS.

O. PIPING INSULATION (INTERIOR APPLICATIONS):
- O.1. GLASS FIBER INSULATION: ASTM C 547 AND ASTM C 795. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F, WHEN TESTED IN ACCORDANCE WITH ASTM C 177. MAXIMUM SERVICE TEMPERATURE: 850 DEGREES F. MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME.
- O.2. VAPOR BARRIER JACKET: WHITE KRAFT PAPER WITH GLASS FIBER YARN, BONDED TO ALUMINIZED FILM; MOISTURE VAPOR TRANSMISSION WHEN TESTED IN ACCORDANCE WITH ASTM E 96/E 96M OF 0.02.
- O.3. INSULATION THICKNESS SCHEDULES:
  - O.3.1. DOMESTIC HOT AND TEMPERED WATER SUPPLY:
    - O.3.1.1. 2 INCH THICKNESS FOR PIPING 2 INCH AND LARGER.
    - O.3.1.2. 1–1/2 INCH THICKNESS FOR PIPING 1 INCH TO 1–1/2 INCH.
    - O.3.1.3. 1 INCH THICKNESS FOR PIPING LESS THAN 1 INCH.
  - O.3.2. DOMESTIC COLD WATER LOCATED IN UNHEATED AREAS:
    - O.3.2.1. 1 INCH THICKNESS FOR PIPING 1–1/2 INCHES AND LARGER.
    - O.3.2.2. 3/4 INCH THICKNESS FOR PIPING 1 INCHES AND SMALLER.

P. INSULATE DOMESTIC HOT WATER, TEMPERED WATER AND WASTE PIPING BELOW HANDICAPPED PLUMBING FIXTURES WITH MOLDED SINGLE PIECE REMOVABLE INSULATION COVERS, FOAM, FIRE RESISTANT, TRUEBRO, OR EQUAL. INSTALL INSULATION COVERS IN ACCORDANCE WITH CBC ACCESS REQUIREMENTS.

Q. FIXTURES, DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1953 LEGISLATION WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS.

R. PROVIDE COMPRESSION SHUTOFF CONTROL STOP VALVES WITH IPS INLETS AND THREADED BRASS NIPPLES AT PIPE CONNECTION ON WATER SUPPLIES TO EACH FIXTURE.

S. PROVIDE CHROMIUM–PLATED FINISH ON FITTINGS AND ACCESSORIES EXPOSED TO VIEW.

T. FIXTURE FITTINGS AND TRIM: CONFORM TO ASME A112.18.1M AND ASME A112.19.5, AS APPLICABLE.

U. PROVIDE WATER HAMMER ARRESTORS AT END OF PIPE RUNS TO TWO OR MORE FIXTURES, PROPERLY SIZED WITH SUFFICIENT DISPLACEMENT VOLUME TO DISSIPATE CALCULATED ENERGY IN THE PIPING SYSTEMS. WATER HAMMER ARRESTORS SHALL BE STAINLESS STEEL SHELL WITH STAINLESS STEEL BELLOWS CONTAINED WITHIN THE CASING.

V. PROVIDE PIPE SLEEVES WHERE PIPES AND TUBING PASS THROUGH WALLS, FLOORS, ROOFS, AND PARTITIONS. FINISH FLUSH AT BOTH ENDS. EXTEND 2 INCHES (50 MM) ABOVE FINISHED FLOORS. PACK SPACE BETWEEN PIPE OR TUBING AND SLEEVE, AND CALK.

W. IDENTIFY PIPING WITH TAPE AND DECALS. INSTALL LABELING ON PIPE AT INTERVALS OF NOT MORE THAN 20 FEET (6 METERS) AND AT LEAST ONCE IN EACH ROOM AND EACH STORY TRAVERSED BY PIPELINE.

X. PROVIDE NON–CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.

Y. ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 10' FROM ANY OUTSIDE AIR INTAKE OR OPENING TO THE BUILDING.

Z. ALL EXPOSED MATERIAL SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED.

PLUMBING SHEET INDEX

SHEET NO.	SHEET TITLE
P0.0.1	PLUMBING NOTES, LEGEND, DETAILS AND SCHEDULES
P1.0.0	PLUMBING SITE PLAN
P1.0.1	PLUMBING FLOOR PLAN

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Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
PLUMBING NOTES, LEGEND, AND SCHEDULES

Drawn By

Checked By

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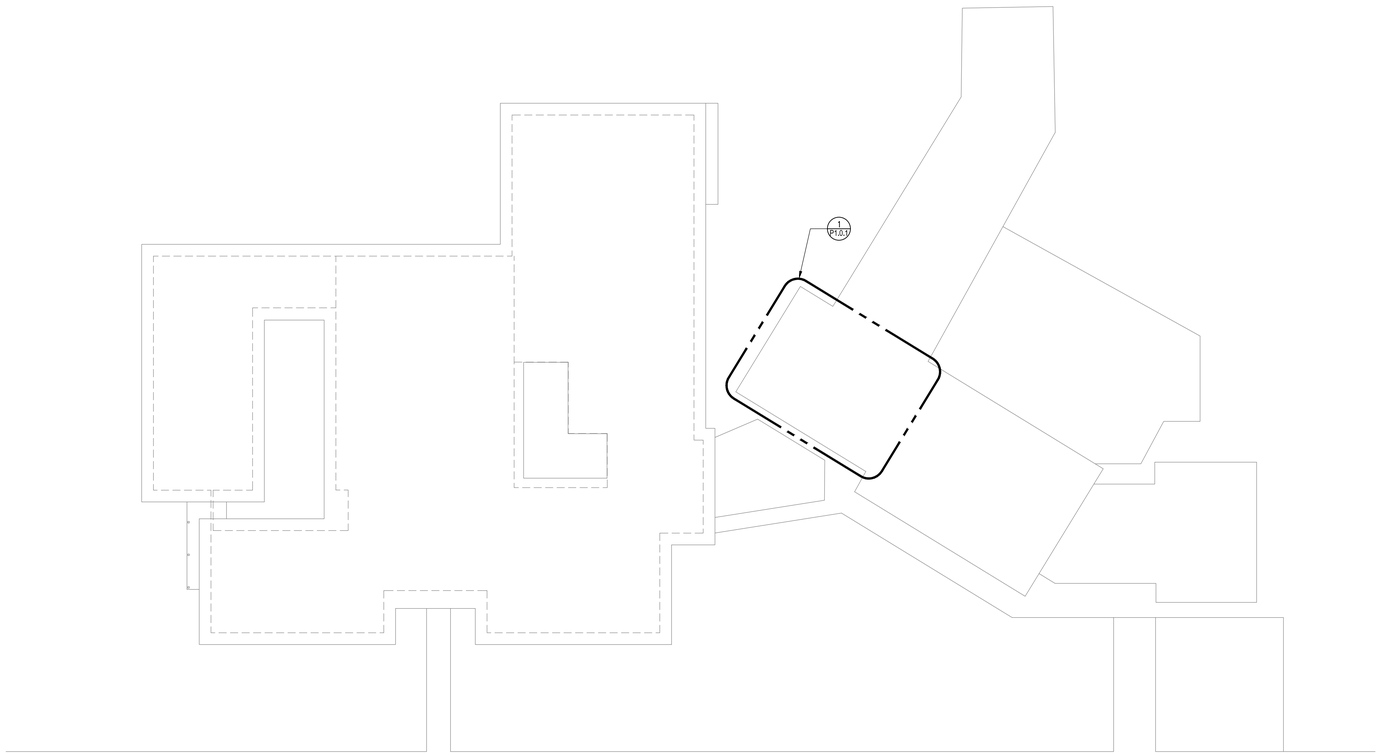
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GENERAL NOTES

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1 **PLUMBING SITE PLAN**
SCALE: 1" = 20'

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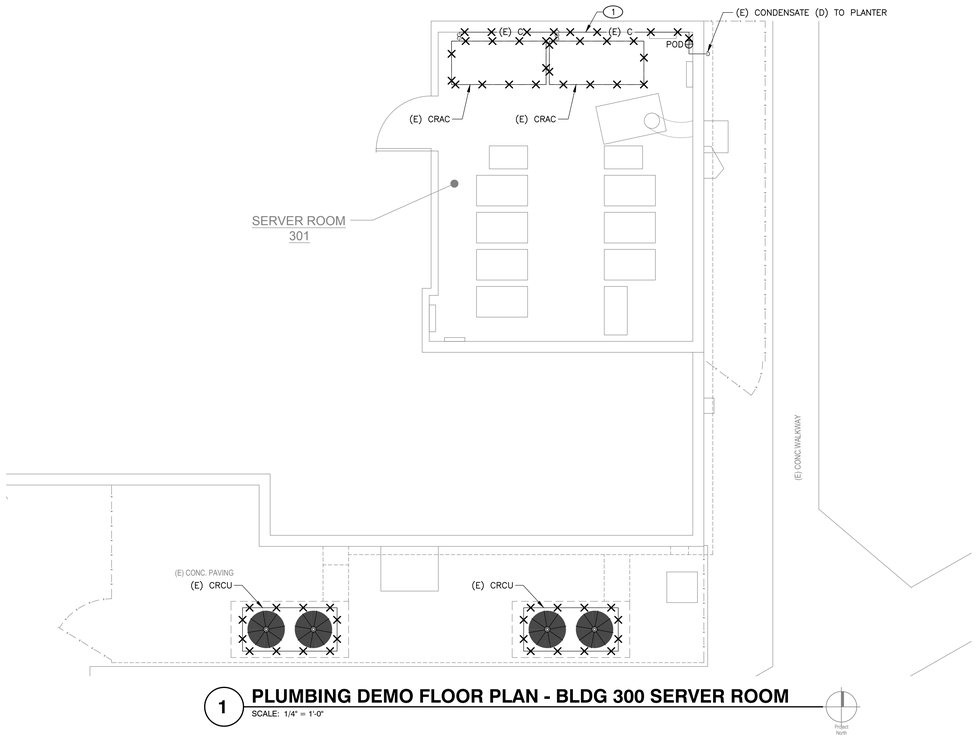
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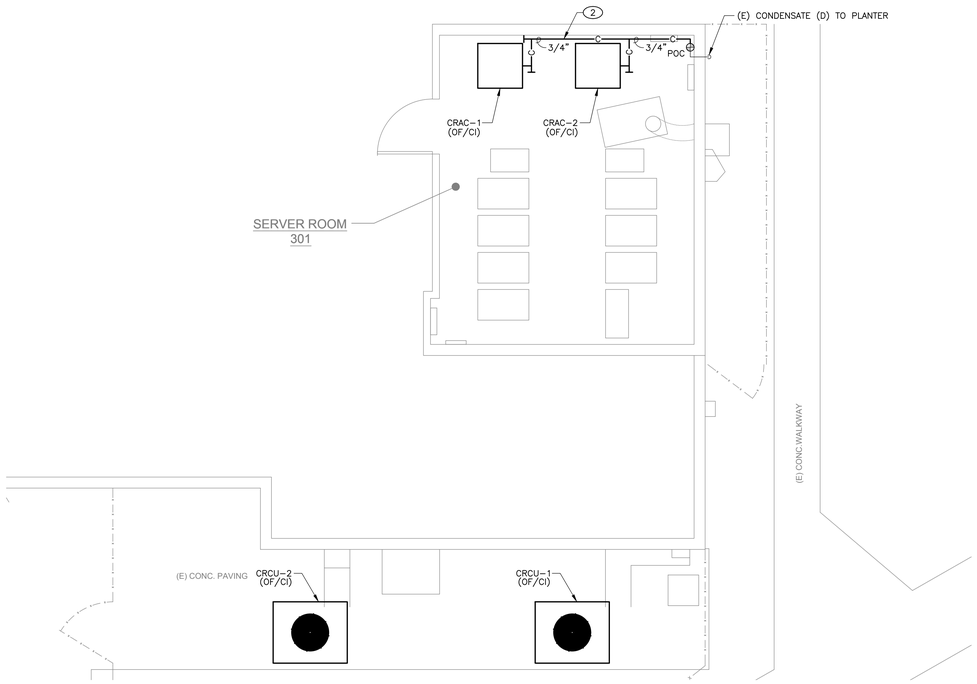
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1 PLUMBING DEMO FLOOR PLAN - BLDG 300 SERVER ROOM

SCALE: 1/4" = 1'-0"



2 PLUMBING FLOOR PLAN - BLDG 300 SERVER ROOM

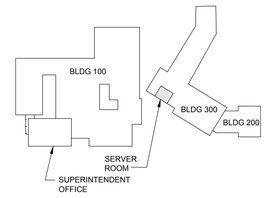
SCALE: 1/4" = 1'-0"

KEY NOTES

1. REMOVE EXISTING PIPING SHOWN HATCHED BACK TO POINT OF DISCONNECT.
2. RACK NEW CONDENSATE PIPING ON INTERIOR WALL WITH UNISTRUT.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



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PLUMBING FLOOR PLAN

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ELECTRICAL SYMBOL LEGEND

ALL SYMBOLS SHOWN IN THIS LEGEND ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

SYMBOL	DESCRIPTION
	POWER
	MAIN SWITCHBOARD OR DISTRIBUTION BOARD, PAD OR FLOOR MOUNTED AS NOTED.
	RECESSED MOUNTED LIGHTING OR DISTRIBUTION PANEL
	SURFACE MOUNTED LIGHTING OR DISTRIBUTION PANEL
	RECESSED TERMINAL CABINET WITH 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
	SURFACE MOUNTED TERMINAL CABINET WITH 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
T	DISTRIBUTION TRANSFORMER, MOUNTING AND SIZE AS NOTED
	NON-FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER DISCONNECT SWITCH
F	FUSED DISCONNECT SWITCH; SIZE DISCONNECT AND FUSES PER UNIT LABEL
F	NON-FUSED / FUSED DISCONNECT; SEE DISCONNECT SWITCH SCHEDULE
	MOTOR STARTER/CONTROLLER
	COMBINATION CIRCUIT BREAKER DISCONNECT/MOTOR STARTER.
	COMBINATION FUSIBLE DISCONNECT/MOTOR CONTROLLER; PROVIDE FUSES PER MANUFACTURER'S REQUIREMENTS. N.F. INDICATES NON-FUSED.
	WALL MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	CEILING MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	FLOOR MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	PLUGMOLD
	POWER POLE
	FLOOR MOUNTED COMBO DUPLEX RECEPTACLE / TELEPHONE/DATA
	FLOOR MOUNTED COMBO DOUBLE DUPLEX RECEPTACLE / TELEPHONE/DATA
PLD	PRODUCTION LIGHTING DEVICE
EV EV	ELECTRIC VEHICLE CHARGING STATION, DUAL PORT & SINGLE PORT
	CIRCUITS
	STUB
	CONTINUATION
	CONDUIT RISER – UP
	CONDUIT DROP – DOWN
	CONDUIT CONCEALED IN CEILING OR WALL.
	CONDUIT CONCEALED IN UNDERFLOOR OR UNDERGROUND
	EXISTING CONDUIT TO REMAIN.
	CONDUIT & CONDUCTORS FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT & CONDUCTORS TO REMAIN FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT AND/OR CONDUCTORS TO BE REMOVED. UNDERGROUND CONDUIT MAY BE ABANDONED IN PLACE.
	HOMERUN TO PANELBOARD OR TERMINAL CABINET WITH CONDUCTORS AS NOTED
#	CIRCUIT CONDUCTORS: LONG TICK INDICATES NEUTRAL CONDUCTOR; SHORT TICKES INDICATE PHASE CONDUCTORS; CURVED TICK INDICATES EQUIPMENT GROUNDING CONDUCTOR; ADDITIONAL CURVED TICK INDICATES ISOLATED GROUNDING CONDUCTOR. NUMBER BY TICKES INDICATE WIRE GAUGE OTHER THAN 12 AWG CU. NO TICKS INDICATE 2#12 CU, 1#12 CU GND, IN 1/2" CONDUIT. OTHERS AS NOTED ON PLAN. NOTE: PROVIDE A CODE SIZED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS FOR THIS PROJECT, WHETHER SHOWN ON PLAN OR NOT.
	FLEXIBLE CONDUIT, 6'-0" LONG MAX. WITH #12 CU GROUND, UNO.
	LEADERS
	BRACKET
	LEADERS
	LIGHTING
	LUMINAIRE – SURFACE
	LUMINAIRE – WALL
	SPOT/FLOOD LUMINAIRE – GROUND MOUNTED. FOR BLDG WALL MOUNTED AS WELL.
	EXTERIOR POLE FIXTURE – SINGLE HEAD
	EXTERIOR POLE FIXTURE – TWIN HEAD
	EXTERIOR PATHWAY POST TOP POLE FIXTURE
	TAGS
X	KEYNOTE SHOWN ON SAME SHEET
'XX' XX–Xx	LIGHT FIXTURE TAG: FIXTURE TAG 'XX' CIRCUIT NUMBER; PANEL XX–Xx SWITCH LEG
X	FEEDER DESIGNATION TAG
X	FOOD SERVICE EQUIPMENT DESIGNATION TAG
X Ex.1	DETAIL DESIGNATION: TOP LETTER INDICATES DETAIL, BOTTOM LETTER/NUMBER INDICATES SHEET
REF x	MECHANICAL EQUIPMENT I.D. TAG – MP&S

FOOTNOTE:

[1] PROVIDE 44" MAX. TO TOP OF BOX AT AREAS WITH FORWARD ACCESSIBLE APPROACH KNEE CLEARANCE, OR PROVIDE 46" MAX. TO TOP OF BOX AT AREAS WITH PARALLEL ACCESSIBLE APPROACH (PER CBC 11B–308).

SYMBOL	DESCRIPTION
	ONE LINE DIAGRAM
(N) PANEL "A"	PANEL IDENTIFICATION
100A 3P	CIRCUIT BREAKER
100A 3P	FUSED SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND
	UNDERGROUND TERMINATION SERVICE LUG
M	UTILITY METER WITH CURRENT TRANSFORMER COMPARTMENT METER SOCKET
M	CUSTOMER–OWNED MULTIFUNCTION METER WITH CURRENT TRANSFORMERS
	MOTOR
	TRANSFORMER WITH GROUND
	UFER GROUND
	BOND TO COLD WATER PIPE, GAS PIPE, BUILDING STEEL
	AUTOMATIC TRANSFER SWITCH
	NEUTRAL LINK
SPD	SURGE PROTECTIVE DEVICE

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7–16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7–16 SECTION 13.3 AS DEFINED IN ASCE 7–16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24,1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE–APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E ☐ ☐ ☐ ☒ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP MD PP E ☐ ☐ ☐ ☐ OPTION 2: SHALL COMPLY WITH HCAI (OSHPD) PRE–APPROVAL INCLUDED IN THESE DRAWINGS WITH PROJECT–SPECIFIC NOTES AND DETAILS.

GENERAL NOTES

ALL GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

1. THESE GENERAL NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN THE EXECUTION OF THE ELECTRICAL WORK AND TO BE INCLUDED IN CONJUNCTION WITH THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATION REQUIREMENTS. SOME OF THE GENERAL NOTES ARE EXCERPTS FROM THE SPECIFICATION.
2. COORDINATE ALL ELECTRICAL SERVICES WITH THE RESPECTIVE UTILITY COMPANIES AND PROVIDE ALL TRENCHING, CONDUITS, WIRING, METER FACILITIES AND OUTLETS REQUIRED BY THEM.
3. WORKMANSHIP SHALL BE OF THE HIGHEST GRADE. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE ACCEPTANCE OF THE ARCHITECT.
4. INSTALL ALL EQUIPMENT, CONDUITS, OUTLETS, AND FIXTURES IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF ALL APPLICABLE CODES (CEC, STATE, COUNTY AND CITY).
5. DO NOT SCALE PLANS FOR FIXTURES, DEVICES, OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS. ALSO REFER TO ACTUAL ON–SITE CONDITIONS.
6. ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND CEC 110.3.
7. ALL ELECTRICAL DEVICES AND EQUIPMENT, FIXTURES, CONDUITS AND WIRING SHOWN ON THESE PLANS ARE NEW, UNLESS OTHERWISE NOTED.
8. OUTLET BOXES INSTALLED IN FIRE WALLS SHALL BE ONE–PIECE STEEL AND INSTALLED IN SEPARATE (STAGGERED) STUD PENETRATIONS, MINIMUM 24 INCHES HORIZONTAL SEPARATION. FIRE WALLS SHALL BE MADE IN ACCORDANCE WITH CBC AND ELECTRICAL CODES.
9. THE FINAL LOCATION OF ALL OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT AND/OR OWNER AT TIME OF CONSTRUCTION.
10. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE WEATHER–PROTECTED.
11. CONTRACTOR SHALL VERIFY THAT ALL LIGHTING FIXTURES, CEILING TRIMS, AND FRAMES ARE COMPATIBLE WITH CEILING SYSTEM INSTALLED.
12. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATIONS AND INSTALLATIONS WITH THE MECHANICAL CONTRACTOR. MAINTAIN REQUIRED CLEARANCES (MINIMUM 3 INCHES) BETWEEN THE LIGHT FIXTURES AND MECHANICAL DUCTS OR EQUIPMENT FOR PROPER OPERATION, INSTALLATION AND/OR REMOVAL OF FIXTURES.
13. ALL CONDUIT SHALL BE ROUTED CONCEALED UNLESS NOTED ON PLAN OR ACCEPTED BY THE ARCHITECT.
14. PROVIDE ALL NECESSARY SLEEVES AND INSERTS FOR ALL WORK PASSING THROUGH OR ATTACHING TO WALLS, FLOORS, OR CEILINGS.
15. ALL WIRING SHALL BE INSTALLED IN RIGID METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CONDUITS INSTALLED CONCEALED IN WALL AND CEILING MAY BE EMT WITH STEEL COMPRESSION TYPE FITTINGS. PVC WHERE INSTALLED UNDERGROUND AND/OR UNDER SLAB. ALL EXPOSED CONDUITS SHALL BE RIGID STEEL CONDUITS WITH THREADED TYPE FITTINGS. INSTALL ALL CONDUITS IN ACCORDANCE WITH CECA STANDARDS OF INSTALLATION.
16. ELECTRICAL NON–METALLIC TUBING (ENT) AND MC CABLE ARE NOT PERMITTED TO BE USED FOR THIS PROJECT, NO EXCEPTIONS.
17. WHERE EXISTING CONDUITS, CONCEALED OR EXPOSED, AND (WIREMOLD) SURFACE RACEWAY IS NOT IN PLACE AS SHOWN ON PLANS, PROVIDE NEW CONDUITS AND (WIREMOLD) SURFACE RACEWAY FOR THE NEW WORK. VERIFY EXISTING CONDITION ON SITE AND PROVIDE ALL NECESSARY NEW MATERIAL, APPARATUS, AND WORK THAT ARE REQUIRED TO BE INCLUDED IN THE BID PACKAGE.
18. CONDUCTORS, #8 AND LARGER, SHALL BE STRANDED COPPER WITH THNN/THWN INSULATION, UNLESS OTHERWISE NOTED.
19. PROVIDE WORKING CLEARANCE PER CEC 110.26 FOR SERVICE PANEL, SUBPANELS, MOTOR DISCONNECT SWITCHES, CONTROL SECTIONS. HVAC EQUIPMENT, APPLIANCES, ETC.
20. PROVIDE A WARNING LABEL (SIGN) CLEARLY VISIBLE TO QUALIFIED PERSONS TO COMPLY WITH NEC AND CEC 110.16 OF POTENTIAL ELECTRIC ARC FLASH HAZARDS AT SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER CEC SECTION 110.24(A).
21. BUILDING SERVICE AND SUBPANELS TO COMPLY WITH CEC 110.9 AND 110.10 INTERRUPTING RATING AND BRACING. PROVIDE A.I.C. CALCULATIONS FOR SUBPANELS IF INTERRUPTING RATING TO BE USED IS LOWER THAN MAIN SERVICE RATING.
22. ALL APPLIANCES SHALL COMPLY WITH CEC ARTICLE 422. APPLIANCE CONTROL AND PROTECTION PER CEC 422–III; BRANCH CIRCUITS PER 422–II.
23. BUILDING EXPANSION JOINTS MAY OR MAY NOT BE INDICATED ON THE ELECTRICAL DRAWINGS. VERIFY THE LOCATIONS OF ALL APPLICABLE BUILDING EXPANSION JOINTS WITH THE ARCHITECTURAL DRAWINGS. WIRING METHODS ACROSS EXPANSIONS JOINTS SHALL INCLUDE USE OF FLEXIBLE FITTINGS OR OTHER DEVICES AS APPROPRIATE TO EACH APPLICATION. IN NO CASE SHALL CONDUIT CROSS SUCH A JOINT IN BUILDING CONSTRUCTION WITHOUT USE OF THE APPROPRIATE WIRING METHODS.
24. CONTRACTOR SHALL SIZE ALL THE INTERIOR AND EXTERIOR BUILDING PULL BOXES AND UNDERGROUND PULL BOXES PER CEC 314.16 AND COMPLY WITH CEC 314.28 FOR INSTALLATION OF RACEWAYS AND WIRING AS REQUIRED BY CODE, UNLESS OTHERWISE NOTED.
25. WHERE ACCESSIBILITY IS NOT AVAILABLE TO ELECTRICAL OUTLETS, DEVICES AND/OR EQUIPMENT, COORDINATE WITH THE ARCHITECT FOR PROVISIONS TO PROVIDE ACCESSIBILITY TO THEM.
26. CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL DRAWINGS AND PROVIDES ALL CONDUITS AND CONTROL WIRING AND POWER WIRING SHOWN ON THE MECHANICAL DRAWINGS THAT IS NOT SHOWN ON THE ELECTRICAL PLANS.
27. CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS AND COORDINATE FOR THE EQUIPMENT LOCATIONS. COORDINATE ROOF PENETRATION WITH THE MECHANICAL CONTRACTOR FOR MECHANICAL CONNECTIONS. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURBS WHERE POSSIBLE. VERIFY ON–SITE.
28. PROVIDE CONVENIENCE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT PER U.M.C. WHERE LOCATED OUTSIDE, PROVIDE WEATHER PROOF AND GFCI CONVENIENCE OUTLET. SECURE ROOF MOUNTED OUTLET TO THE MECHANICAL EQUIPMENT. VERIFY LOCATION IN FIELD WITH THE MECHANICAL CONTRACTOR.
29. VERIFY SINGLE–POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON–SITE PRIOR TO ELECTRICAL ROUGH–IN. PROVIDE DUAL DISCONNECTS IF TWO–POINT CONNECTIONS ARE REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
30. SWITCH DEVICES CONTROLLING MECHANICAL EQUIPMENT SHALL BE SIZE AND TYPE REQUIRED AND SHALL BE SERVED WITH QUANTITY OF WIRES AS REQUIRED. REFER TO DIVISION 23 MECHANICAL PLANS AND SPECIFICATIONS.
31. COORDINATE THE HVAC EQUIPMENT FOR FUSES REQUIRE. WHERE FUSES ARE REQUIRED, VERIFY FUSE SIZE ON–SITE AND PROVIDE FOR HVAC EQUIPMENT PER UNIT NAMEPLATE SPECIFICATIONS.
32. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430–IX AND 440.II.
33. MOTOR STARTERS FOR HVAC EQUIPMENT ARE PROVIDED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
34. ALL CONNECTIONS FROM THE DISCONNECT SWITCHES TO HVAC UNITS SHALL BE COPPER CONDUCTORS. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430–VII, 430–VIII, AND 440–II.
35. VERIFY LOCATION AND HEIGHT OF ALL MECHANICAL OR FIXTURE EQUIPMENT OUTLETS WITH SUPPLIER PRIOR TO ANY ROUGH–IN WORK. PROVIDE ALL RUNS AND CONNECTIONS TO EQUIPMENT.
36. ALL TERMINATION PROVISIONS OF EQUIPMENT, INCLUDING CIRCUITS RATED 100 AMPERES OR LESS, SHALL BE RATED AT 60 DEGREE, CENTIGRADE PER CEC 110.14(c).
37. ALL CONDUITS SHALL BE CONCEALED BELOW SLAB, IN WALLS AND/OR ABOVE CEILINGS EXCEPT IN ELECTRICAL ROOMS, MECHANICAL ROOMS, AND OTHER SIMILAR UTILITY ROOMS AS APPROVED BY THE ARCHITECT. NO CONDUIT SHALL BE EXPOSED ON EXTERIOR BUILDING SURFACES WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.
38. PROVIDE A CODE SIZED GROUND CONDUCTOR IN ALL CONDUITS WHETHER INDICATED ON PLANS OR NOT.

ELECTRICAL ABBREVIATIONS

SYMBOL	DESCRIPTIONS
AC	ABOVE COUNTER
AF	AMPERE FRAME OR FUSE
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFS	AUTOMATIC FIRE SPRINKLER
AIC	AMPS INTERRUPTING CAPACITY RATING
AMP, A	AMPERES
APPR	APPROVED
AS	AMPERE SWITCH RATING
AT	AMPERE TRIP RATING OF BREAKER
AUTO	AUTOMATIC
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BFC	BELOW FINISHED CEILING
BMS	BUILDING MANAGEMENT SYSTEM
BKR	BREAKER
C	CONDUIT
cd	CANDELA
CEC	CALIFORNIA ELECTRICAL CODE
CFL	COMPACT FLUORESCENT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CNTRL	CONTROL
CO	CONDUIT ONLY w/PULL STRING
CSFM	CALIFORNIA STATE FIRE MARSHALL
CT	CURRENT TRANSFORMER
CU	COPPER
CWP	COLD WATER PIPE
DEF	DEFROST
DISC	DISCONNECT
DIST	DISTRIBUTION
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EDF	ELECTRIC DRINKING FOUNTAIN
EL	EVENING LIGHT
ELEV	ELEVATION
EM	EMERGENCY LIGHT
EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE RESISTOR
EP	EMERGENCY POWER
EQPT	EQUIPMENT
EXH	EXHAUST
(E)	EXISTING
(ED)	EXISTING TO BE DEMOLISHED
(F)	FUTURE
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FF	FINISHED FLOOR
FG	FINISHED GRADE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
GFCI	GROUND FAULT CURRENT INTERRUPTER
GND	GROUND
HP	HORSE POWER
HZ	HERTZ
IG	ISOLATED GROUND
INC	INCANDESCENT
ISC	SHORT CIRCUIT CURRENT
ISOL	ISOLATED
JBOX	JUNCTION BOX
kcmil	THOUSAND CIRCULAR MILS
kV	KILOVOLTS
kW	KILOWATTS
kVA	KILOVOLT AMPERES
LT, LTS	LIGHT, LIGHTS
LTG	LIGHTING
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPOE	MAIN POINT OF ENTRY
MS	MOTION SENSOR
MSB	MAIN SWITCHBOARD
MT	CONDUIT ONLY w/PULL STRING
MTD	MOUNTED
(N)	NEW
NEMA	NATIONAL ELECTRIC MANUFACTURER ASSOCIATION
NIES	NOT IN ELECTRICAL SECTION OF THESE PLANS & SPECIFICATIONS
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
NT	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
PH, P	PHASE OR POLE
PB	PULLBOX
PFB	PROVIDE FOR FUTURE BREAKER
PIV	POST INDICATOR VALVE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
(R)	RELOCATED
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REQD	REQUIRED
RGSC	RIGID GALVANIZED STEEL CONDUIT
SHLD	SHIELDED
SHT	SHEET
SPD	SURGE PROTECTION DEVICE
SPECS	SPECIFICATIONS
SW	SWITCH
SYM	SYMMETRICAL
TEMP	TEMPERATURE
TOF	TIMED OFF DELAY
TS	TAMPER SWITCH
TSTAT	THERMOSTAT
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UGPS	UNDERGROUND PULL SECTION
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
V	VOLTS
VL	VERIFY LOCATION
W	WATTS
w/	WITH
WP	WEATHERPROOF
WPL	WEATHERPROOF LOCKING
WPU	WEATHERPROOF WHILE IN USE
(X)	REMOVE
XFMR	TRANSFORMER

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE
E0.0.1	ELECTRICAL SYMBOL LEGEND,NOTES & ABBREVIATIONS
E0.0.2	ELECTRICAL DETAILS
E1.0.0	ELECTRICAL SITE PLAN
E1.0.1	ELECTRICAL FLOOR PLANS
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES

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Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ELECTRICAL SYMBOL LEGEND,NOTES & ABBREVIATIONS

Drawn By

Checked By

NO.	DATE	ISSUE

Project No.
23-525

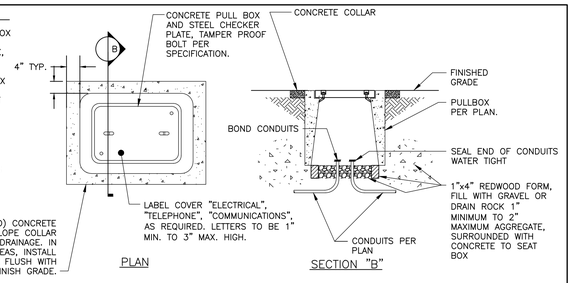
Date
01/03/2024

Drawing No.
E0.0.1

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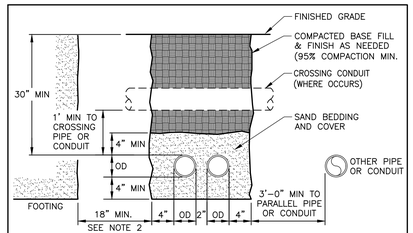
NOTES:

1. ALL SPLICES WITH-IN THE CONCRETE PULLBOX ARE TO BE SEALED WITH AN INSULATING AND ENCAPSULATING RESIN PACK, SCOTCHCAST 4 OR EQUAL.
2. ALL CONDUIT WITHIN THE CONCRETE PULLBOX ARE TO BE SEALED WITH RTV DUCT SEAL TO PREVENT WATER ENTERING CONDUIT SYSTEM.
3. ALL CONDUCTORS AND CABLES ARE TO BE GROUPED AND WIRE TIED EVERY 6" PER CONDUIT FILL.
4. PROVIDE TWO 12" EXTENSION RINGS UNLESS NOTED OTHERWISE



FILENAME

TYPICAL UNDERGROUND CONCRETE PULLBOX DETAIL | NTS | 6

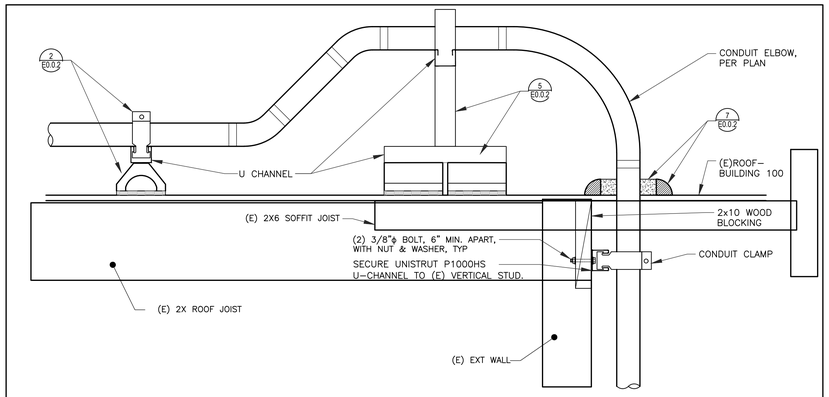


NOTES:

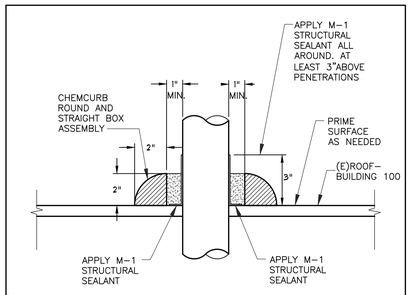
1. TRENCHING LOCATED IN PAVED AREAS – ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY THAT HAS JURISDICTION.
2. ALL PIPES AND TRENCHES MUST ALSO CONFORM WITH CBC 1809A.14

FILENAME

TYPICAL TRENCH DETAIL | NTS | 4



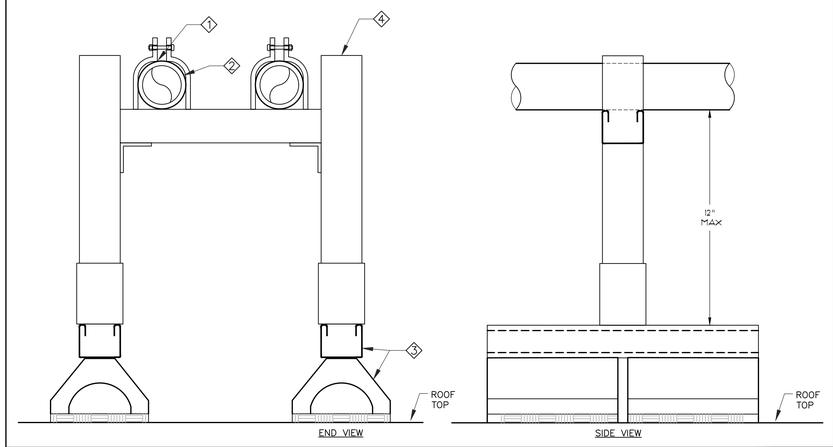
ROOF CONDUIT SUPPORT / PENETRATION DETAIL | NTS | 1



CONDUIT PENETRATION CROSS SECTION | NTS | 7

KEY NOTES:

1. HOT-DIPPED GALVANIZED UNISTRUT CONDUIT CLAMP. SIZE AS REQUIRED.
2. CONDUIT AS NOTED ON DRAWINGS.
3. ROOFTOP SUPPORT BASE, B-LINE DB_DS SERIES WITH HOT-DIPPED GALVANIZED CHANNEL. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC.
4. B-LINE "DURA-BLOK" DB_DS SERIES, SH RISER CHANNEL 1 5/8" x 1 5/8". PACKAGE MODEL# DB2318DS



FILENAME

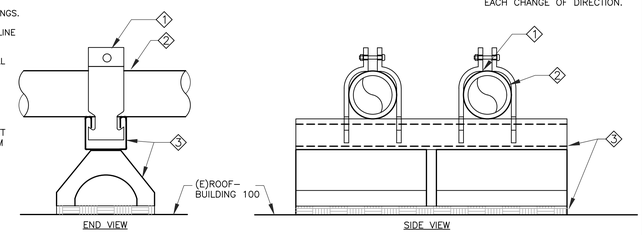
ROOF CONDUIT HIGH SUPPORT DETAIL | NTS | 5

KEY NOTES:

1. HOT-DIPPED GALVANIZED UNISTRUT CONDUIT CLAMP. SIZE AS REQUIRED.
2. CONDUIT AS NOTED ON DRAWINGS.
3. ROOFTOP SUPPORT BASE, B-LINE C6 SERIES WITH HOT-DIPPED GALVANIZED B12 CHANNEL. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC.

NOTE:
ALL SUPPORTS TO BE MAX 10 FT ON CENTER AND MAX 3 FT FROM ALL CONDUIT TERMINATIONS WHERE OCCURS.

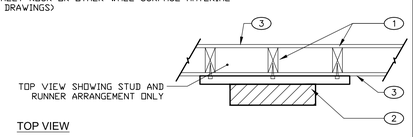
NOTE:
INSTALL SUPPORT BLOCK 8'-0" O.C. MAX, WITHIN 36" OF A BOX CONNECTION, AND AT EACH CHANGE OF DIRECTION.



ROOF CONDUIT LOW SUPPORT DETAIL | NTS | 2

KEY NOTES:

1. WOOD STUD EXISTING
2. SURFACE MOUNTED PANEL CABINET (SEE NOTE A FOR PANEL WEIGHT)
3. EXISTING SHEET ROCK OR OTHER WALL SURFACE MATERIAL (SEE ARCH. DRAWINGS)



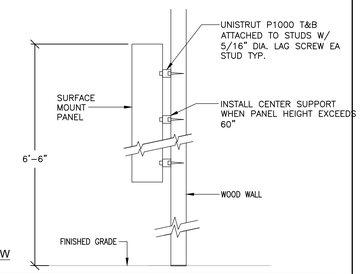
TOP VIEW

NOTES:

A. PANEL WEIGHT:
REGULAR: 150 LBS.
LARGE: 250LBS. MAX

B. REFER TO PANEL SCHEDULE SHEET FOR SIZES OF PANELS.

C. CENTER OF GRAVITY OF CABINET FROM TOP OF FLOOR = ±50".



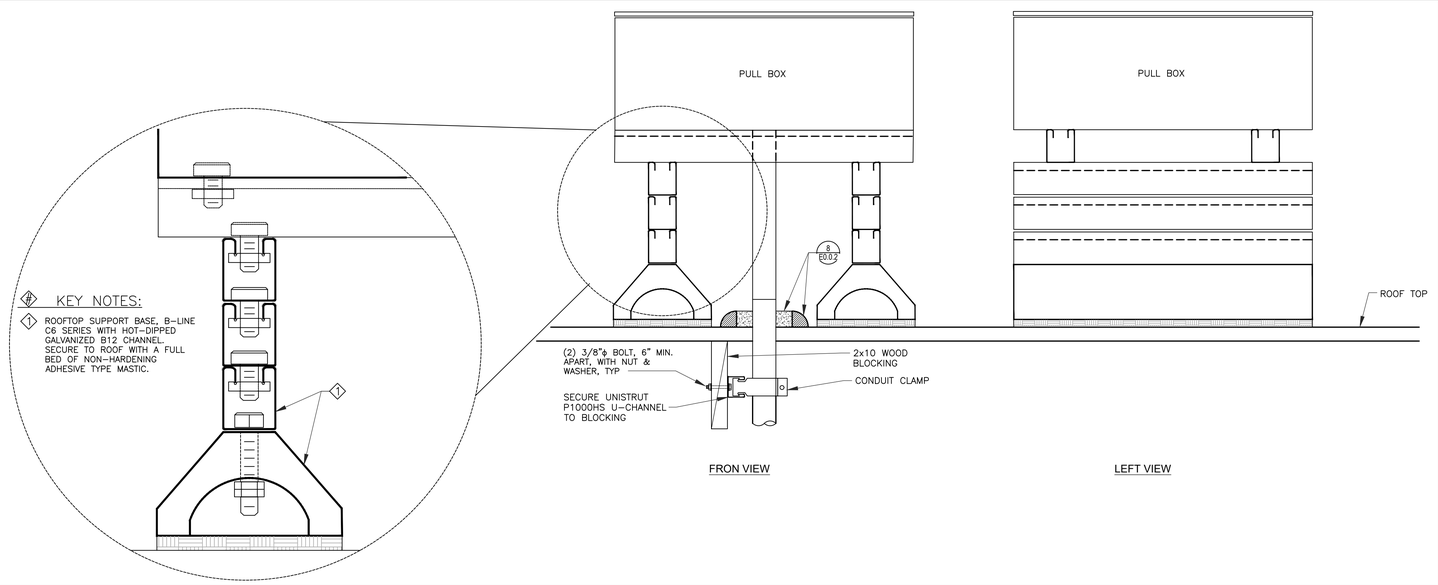
SIDE VIEW

FILENAME

SURFACE PANELBOARD/CABINET WOOD FRAMING MOUNTING DETAIL | NTS | 8

KEY NOTES:

1. ROOFTOP SUPPORT BASE, B-LINE C6 SERIES WITH HOT-DIPPED GALVANIZED B12 CHANNEL. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC.



ROOF PULL BOX SUPPORT DETAIL | NTS | 3

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Job #: 23-2138

SEAL

REGISTERED PROFESSIONAL ENGINEER RAMI S. ZEITOUN No. E 18762 Exp. 9/30/24 ELECTRICAL STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ELECTRICAL DETAILS

Drawn By
Checked By

NO.	DATE	ISSUE

Project No.
23-525
Date
01/03/2024
Drawing No.
E0.0.2

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO STARTING ANY WORK. SHOULD ANY DISCREPANCY EXIST, CONTRACTOR SHALL NOTIFY ENGINEER AND SCHOOL DISTRICT REPRESENTATIVE.

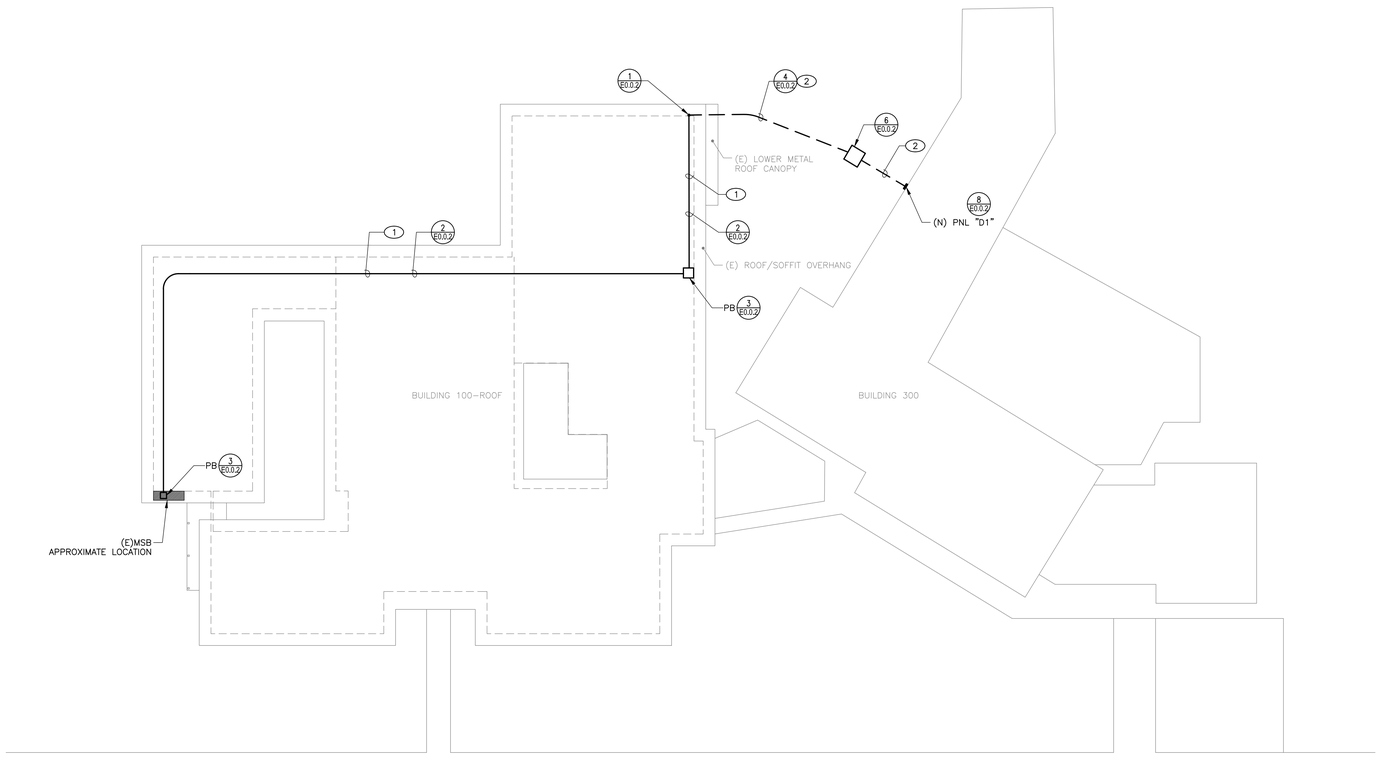
B. ALL NEW EXPOSED CONDUITS IN A SCOPE OF WORK SHALL BE IMC TYPE WITH THREADED CONNECTORS AND FITTINGS.

C. IN INSTANCES WHERE MORE THAN 3 CURRENT–CARRYING CONDUCTORS SHARE A COMMON RACEWAY CONDUCTOR AMPACITIES SHALL BE ADJUSTED IN ACCORDANCE WITH CEC 310.15(B)(3)(a) AND 310.15(B)(2)(a).

D. CONTRACTOR SHALL UPDATE ELECTRICAL PANELBOARD DIRECTORIES TO REFLECT ANY CHANGES MADE TO A CIRCUIT ARRANGEMENT.

KEY NOTES

1. CONDUCTORS ON THE ROOF IN CONDUIT, SEE ONE LINE DIAGRAM FOR MORE INFORMATION.
2. PROVIDE (N) UNDERGROUND CONDUITS AND CONDUCTORS TO (N) PANEL "D". REFER TO ONE LINE DIAGRAM ON SHEET E6.4.2 FOR MORE INFO. SEE 4/E0.0.2 FOR TYPICAL TRENCH DETAIL.



1 ELECTRICAL SITE PLAN
SCALE: 1" = 20'

TRUE NORTH
PROJECT NORTH

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Drawing Title
ELECTRICAL SITE PLAN

Drawn By

Checked By

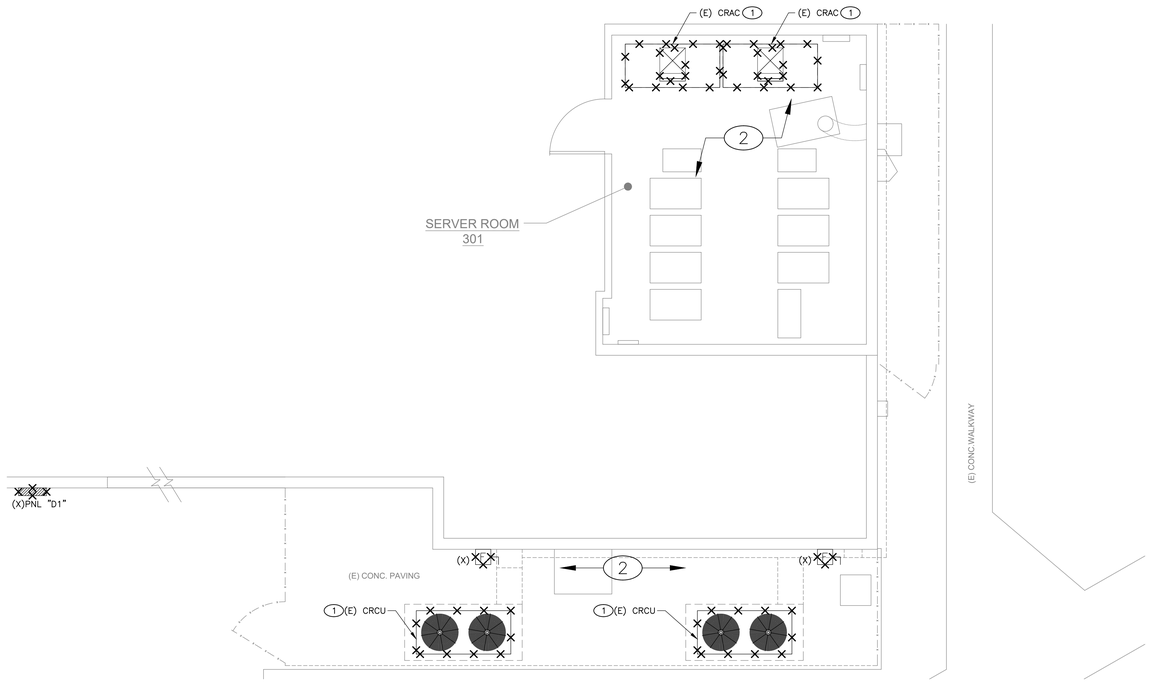
NO.	DATE	ISSUE

Project No.
23-525

Date
01/03/2024

Drawing No.
E1.0.0

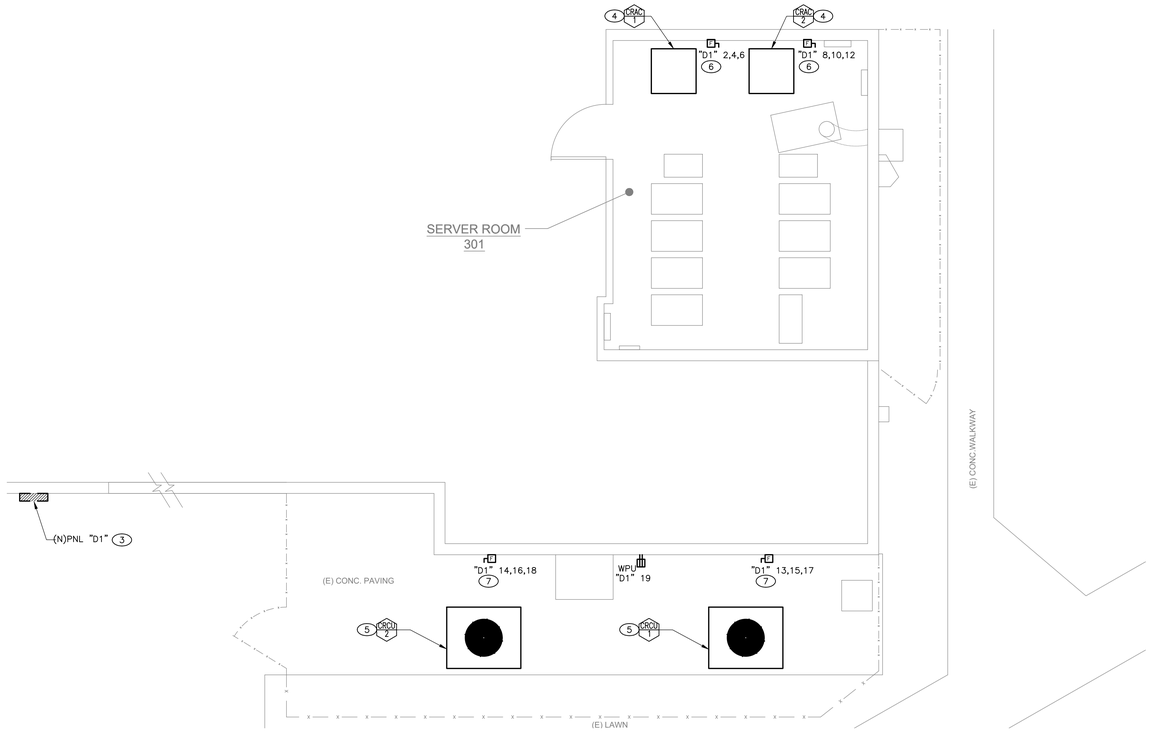
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1 ELECTRICAL DEMO FLOOR PLAN - SERVER ROOM

SCALE: 1/4" = 1'-0"

BLDG # 300



2 ELECTRICAL FLOOR PLAN - SERVER ROOM

SCALE: 1/4" = 1'-0"

BLDG # 300

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO STARTING ANY WORK. SHOULD ANY DISCREPANCY EXIST, CONTRACTOR SHALL NOTIFY ENGINEER AND SCHOOL DISTRICT REPRESENTATIVE.

B. ALL NEW EXPOSED CONDUITS IN A SCOPE OF WORK SHALL BE IMC TYPE WITH THREADED CONNECTORS AND FITTINGS.

C. EACH NEW DISCONNECT SWITCH SHALL BE PERMANENTLY MARKED WITH CORRESPONDING CIRCUIT NUMBER SERVING THAT UNIT.

D. IN INSTANCES WHERE MORE THAN 3 CURRENT–CARRYING CONDUCTORS SHARE A COMMON RACEWAY CONDUCTOR AMPACITIES SHALL BE ADJUSTED IN ACCORDANCE WITH CEC 310.15(B)(3)(a) AND 310.15(B)(2)(a).

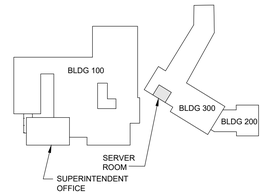
E. CONTRACTOR SHALL UPDATE ELECTRICAL PANELBOARD DIRECTORIES TO REFLECT ANY CHANGES MADE TO A CIRCUIT ARRANGEMENT.

F. RECEPTACLES OF 15 AND 20 AMPERES, 125 AND 250 VOLTS INSTALLED IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHETHER OR NOT THE ATTACHMENT PLUG CAP IS INSERTED. AN OUTLET BOX HOOD INSTALLED FOR THIS PURPOSE SHALL BE LISTED AND SHALL BE IDENTIFIED AS "EXTRA–DUTY" PER CEC 406.9(B)(1).

KEY NOTES

1. REMOVE ALL ELECTRICAL DEVICES, APPURTENANCES AND WIRING ASSOCIATED WITH MECHANICAL DEMO EQUIPMENT. REMOVE CONDUCTORS UP TO THE SUPPLY SOURCE. REMOVE ACCESSIBLE CONDUITS AS POSSIBLE. MAINTAIN CIRCUIT CONTINUITY FOR THE DEVICES TO REMAIN. COORDINATE WITH MECHANICAL DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION.
2. MAINTAIN PROTECT ALL ELECTRICAL CONDUITS, EQUIPMENT, SWITCHES, BOXES AND DEVICES TO REMAIN AND ARE NOT ASSOCIATED WITH DEMO MECHANICAL UNITS.
3. PROVIDE (N) OUTDOOR RATED PANEL "D" SEE ONE LINE DIAGRAM AND PANEL SCHEDULE ON SHEET E6.4.2 FOR MORE INFO. SEE 8/E0.0.2 FOR MOUNTING DETAIL.
4. CRAC: 208V/3PH, 42.9 FLA, 50.8 MCA, 80 MOCP. PROVIDE 80AF/3P/100AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
5. CRCU: 208V/3PH, 2.3 FLA, 2.9 MCA, 15 MOCP. PROVIDE 15AF/3P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
6. PROVIDE 1–1/4"C – 3#2 CU + 1#8 CU GND.
7. PROVIDE 3/4"C – 3#10 CU + 1#10 CU GND.

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KEY PLAN

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RAMI S. ZEIDAN
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ELECTRICAL
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ELECTRICAL FLOOR PLANS

Drawn By

Checked By

NO.	DATE	ISSUE

Project No.
23-525

Date
01/03/2024

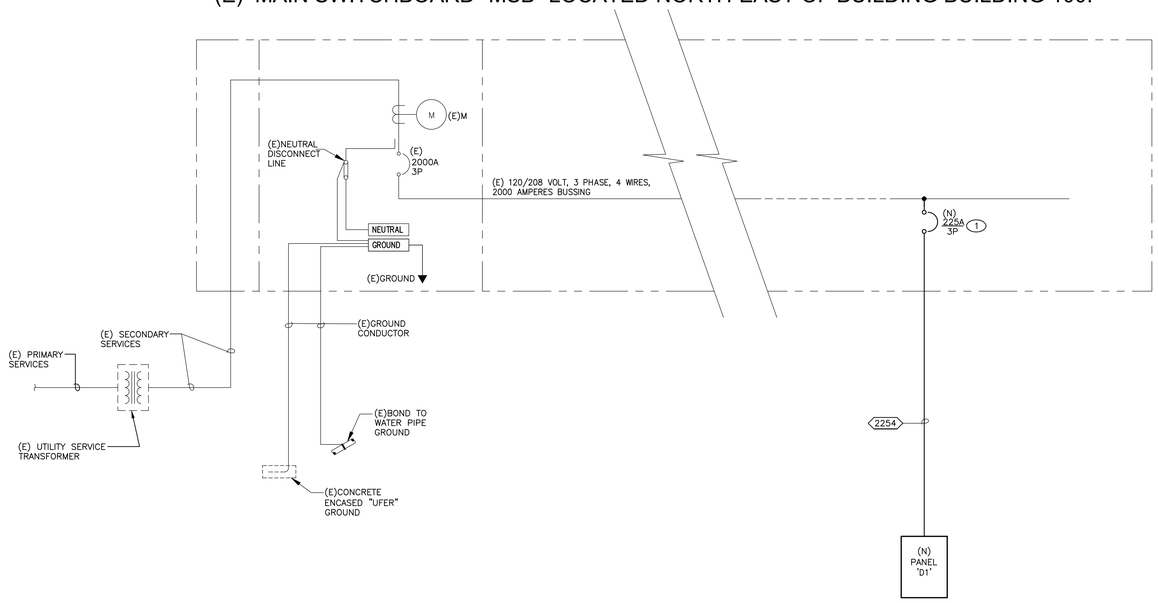
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E1.0.1

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GENERAL NOTES

A. PROVIDE ALL NECESSARY AUXILIARY EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

(E) MAIN SWITCHBOARD "MSB" LOCATED NORTH-EAST OF BUILDING BUILDING 100.



KEY NOTES

1. PROVIDE NEW CIRCUIT BREAKERS INSIDE THE (E) MAIN SWITCHBOARD "MSB" FOR (N) PANEL "D1" MATCH THE (E) AIC. RATING.

FEEDERS SCHEDULE		
TAG	RATING	CONDUIT/CONDUCTOR
2254	225A/3P/3W	(1) 3" C - 4 # 4/0 CU + 1 # 4 CU GND.

PANEL "D1"

120/208 Volt, 3 Phase, 4 Wire
225 Amp BUS CU.
225 Amp MCB
Amp MLO

FED FROM MSB at BLDG 100
22,000 AIC
NEMA 3R Type

			PHASE SUMMARY (WATTS)								
CKT.	BKR	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	BKR	CKT.
1	[E] 20/2	(E) LOAD	1,920			5,152			CRAC-1	80/3	2
3	[E] 20/1	(E) LOAD		1,920			5,152		-	-	4
5	[E] 20/1	(E) LOAD			1,920			5,152	-	-	6
7	[E] 70/3	(E) LOAD	4,803			5,152			CRAC-2	80/3	8
9	-	-		4,803			5,152		-	-	10
11	-	-			4,803			5,152	-	-	12
13	15/3	CRCU-1	276			276			CRCU-2	15/3	14
15	-	-		276			276		-	-	16
17	-	-			276			276	-	-	18
19	20/1	RECEPT	180						SPACE	PFB	20
21	PFB	SPACE							SPACE	PFB	22
23	PFB	SPACE							SPACE	PFB	24
25	PFB	SPACE							SPACE	PFB	26
27	PFB	SPACE							SPACE	PFB	28
29	PFB	SPACE							SPACE	PFB	30
31	PFB	SPACE							SPACE	PFB	32
33	PFB	SPACE							SPACE	PFB	34
35	PFB	SPACE							SPACE	PFB	36
37	PFB	SPACE							SPACE	PFB	38
39	PFB	SPACE							SPACE	PFB	40
41	PFB	SPACE							SPACE	PFB	42
		PHASE TOTALS	A	B	C						
			17,759	17,579	17,579						

PANEL AND CIRCUIT BREAKER NOTES:
[1]
[2]

DEMAND LOADS		
LIGHTING / CONTINUOUS LOAD x 125%		Watts
RECEPTACLES / OTHER x 100%	52,917	Watts
LARGEST MOTOR x 25%		Watts
TOTAL DEMAND LOADS	52,917	Watts
TOTAL DEMAND AMPS	147	AMPS

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No. E 16762
Exp. 9/30/24
ELECTRICAL
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES

Drawn By

Checked By

NO.	DATE	ISSUE

Project No.
23-525

Date
01/03/2024

Drawing No.
E6.4.2

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STRUCTURAL CALCULATIONS

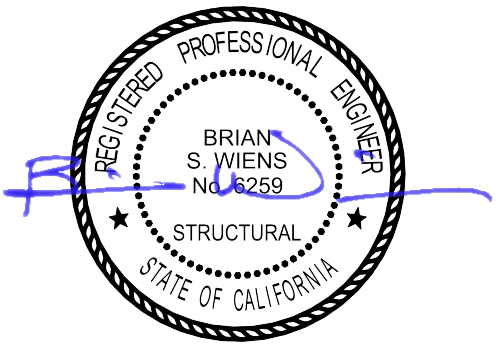
FOR

ALUM ROCK USD DISTRICT OFFICE HVAC UPGRADES
SERVER ROOM

SAN JOSE, CA

January 3rd , 2024

Client: JK Architecture Engineering
Buehler SEOR: Brian Wiens
Buehler Project Engineer: Kei Kusakabe
Buehler Job No.: 2023-0347



ALUM ROCK USD DISTRICT OFFICE
HVAC UPGRADES - SERVER ROOM
STRUCTURAL CALCULATIONS
TABLE OF CONTENTS

Table of Contents *00*

Project Description and Design Criteria Summary *01*

Equipment Anchorage Design

Equipment Schedule *02*

Fan Coil (FC) *03*

Condenser Unit (CU) *04*

Electrical Panel (EP) *05*

Project Description:

The project consists of HVAC upgrades at the District Office located at 2930 Gay Avenue in San Jose, California. The HVAC upgrades include mechanical upgrades for the replacement of the HVAC equipment serving the existing server room. The project will be permitted under the local jurisdiction and will not be under the purview of DSA. As-built structural drawings are not available, however, other discipline's drawings may be available.

Project Location: 2930 Gay Ave, San Jose, California 95127

Design Criteria:

Building Type: Risk Category: II

Design Codes: 2022 California Building Code (2021 IBC)
ASCE 7-16: Minimum Design Loads for Buildings and Other Structures
ACI 318-19: Building Code Requirements for Structural Concrete
ANSI/AWC NDS-18: National Design Specification (NDS) for Wood Construction with 2018 Supplement.

Wind Criteria: 92 mph, Exposure C GC_{pi} = ±0.18 (Enclosed Structure)

Seismic Criteria: Site Class: D S_S = 1.94 S_1 = 0.743 S_{DS} = 1.552 S_{D1} = N/A
Seismic Design Category: D I_E = 1.00 I_p = 1.00

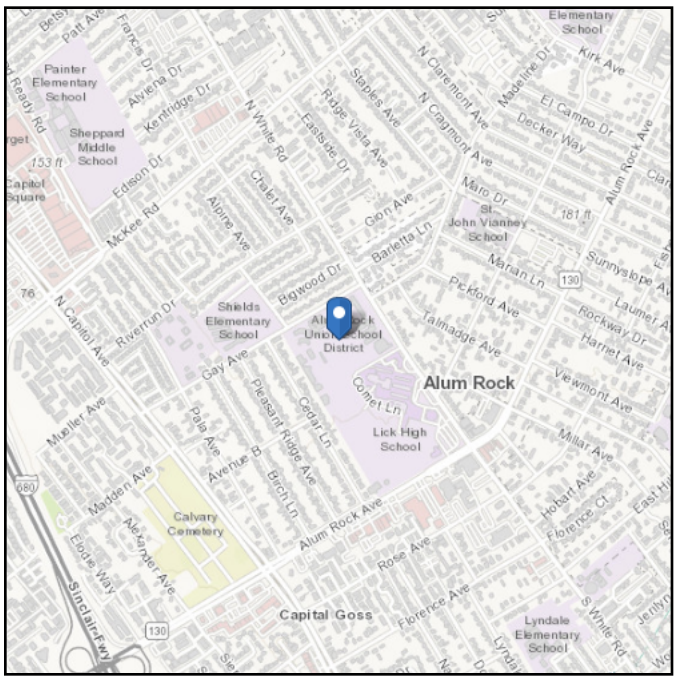
Material Specifications:

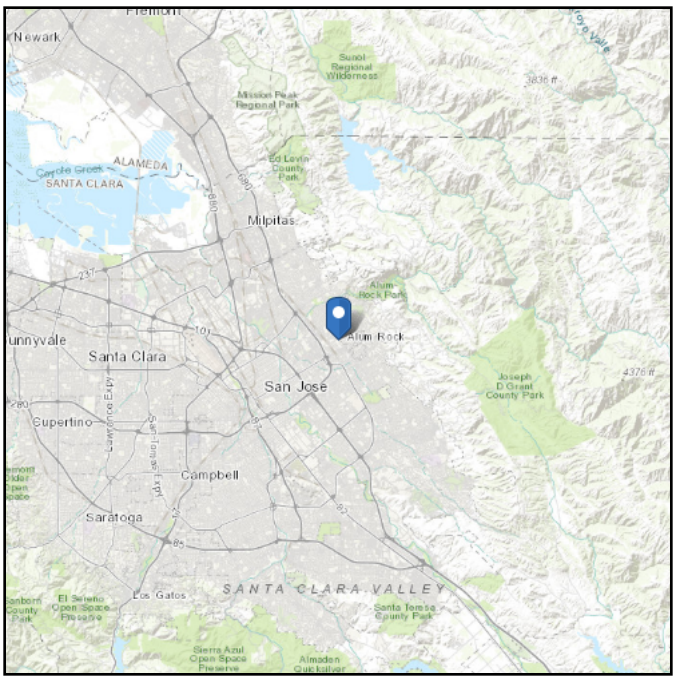
Concrete: (Cement ASTM C-150)		W/C Ratio
Slab-on-grade:	f'_c = 3500 psi	0.45

ASCE 7 Hazards Report

Address:
2930 Gay Ave
San Jose, California
95127

Standard:	ASCE/SEI 7-16	**Latitude:**	37.368826
Risk Category:	II	**Longitude:**	-121.832765
Soil Class:	D - Stiff Soil	**Elevation:**	164.37208146069383 ft (NAVD 88)





Wind

Results:

Wind Speed	92 Vmph
10-year MRI	64 Vmph
25-year MRI	70 Vmph
50-year MRI	74 Vmph
100-year MRI	79 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Wed Dec 20 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.95	S_{D1} :	N/A
S_1 :	0.747	T_L :	12
F_a :	1	PGA :	0.82
F_v :	N/A	PGA_M :	0.902
S_{MS} :	1.95	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.3	C_v :	1.49

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Dec 20 2023

Date Source: USGS Seismic Design Maps

Snow

Results:

Ground Snow Load, p_g:	0 lb/ft^2
Mapped Elevation:	164.4 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Wed Dec 20 2023

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported ‘elevation’ and ‘mapped elevation’ differ significantly from each other.

Rain

Results:

15-minute Precipitation Intensity:	1.96 in./h
60-minute Precipitation Intensity:	0.94 in./h

Data Source:	NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14 (https://www.nws.noaa.gov/oh/hdsc/)
Date Accessed:	Wed Dec 20 2023

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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02 - Equipment Anchorage Design

The HVAC upgrades include mechanical upgrades for the replacement of the HVAC equipment serving the existing server room. This includes (2) Fan Coil Units, (2) Condensing Units, and (1) Electrical Panel.

ID	Description	Anchorage Detail	Calculation Page
FC	Fan Coil	3/M0.0.2	03
CU	Condensing Unit	4/M0.0.2	04
EP	Electrical Panel	5/E0.0.2	05

03 – Fan Coil Design

BUEHLER

PROJECT ARUSD DISTRICT OFFICE SERVER ROOM UPGRADES

JOB NO. 2023-0347 DATE 01/03/2024

CLIENT JKAE BY KHK PAGE NO. 03.1

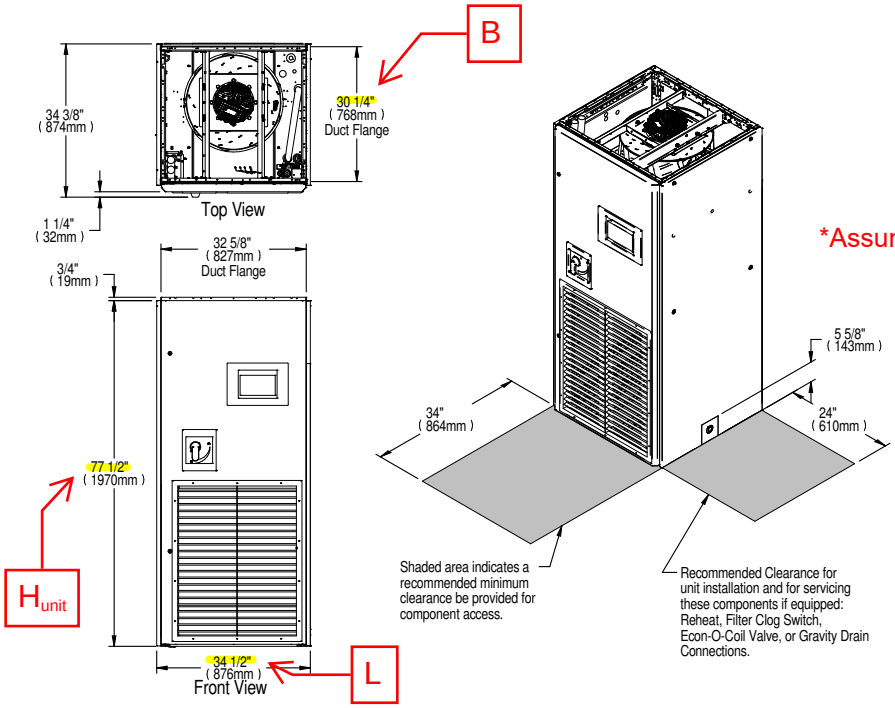
FC-1 & FC-2

VERTIV.

LIEBERT® PDX/PCW

CABINET DIMENSIONAL DATA

UPFLOW MODELS

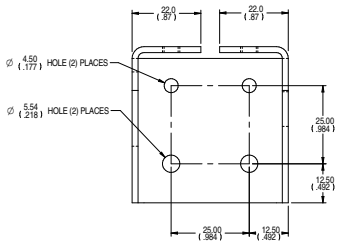


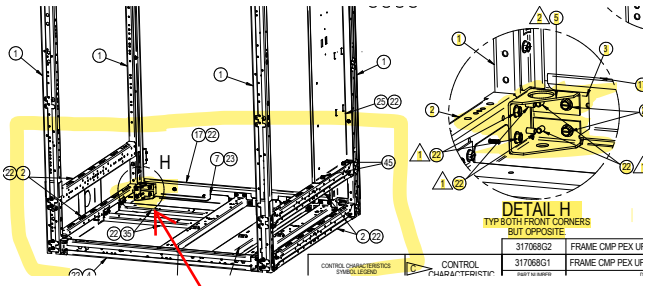
*Assume $H_{CG} = (2/3)*H_{UNIT}$

DRY WEIGHT lb (kg) APPROXIMATE			
Liebert® PDX Model No.	**PX011**	**PX018-023**	**PX029**
Air Cooled	600 (272)	670 (304)	700 (317)
Air Cooled w/dual cool	700 (317)	750 (340)	790 (358)
Water/Glycol	620 (281)	690 (313)	720 (327)
GLYCOOL or Water/Glycol w/dual cool	720 (327)	770 (349)	810 (367)
Liebert® PCW Model No.	**PW011**	**PW017**	**PW029**
Chilled Water	575 (260)	600 (272)	650 (294)

Note: Unit with front return shown. Bottom return with rear return floorstand is also available (24" height rear return floorstand is required for use with bottom return unit).

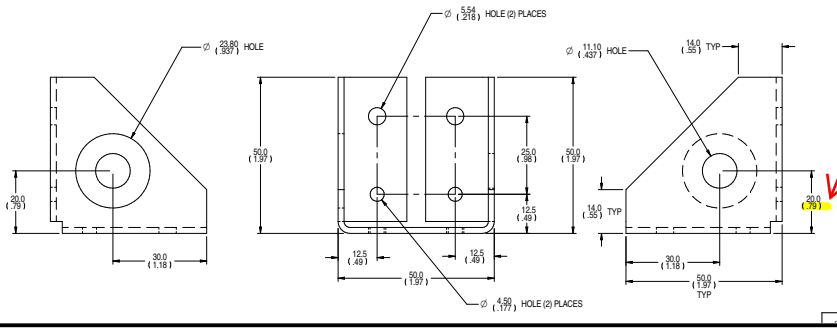
Wp = 1.2*700# = 840# (conservative)

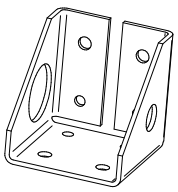




$d_L = L - 2(0.79")$ (conservative)

$d_B = B - 2(0.79")$ (conservative)



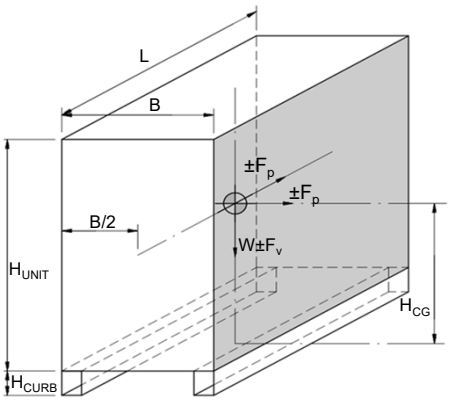


	DESIGN MAJOR	316848P1	BRKT PEX-S CORNER GUSSET

PROJECT	ARUS DO SERVER ROOM UPGRADES		
PROJECT NO.	2023-0347	DATE	1/3/2024
CLIENT	JKAE	BY	KHK	SHEET NO.	03.2

Base Mounted Equipment Anchorage Design - SEISMIC

ASCE 7-16, Ch. 13



Unit Identification: **FC-1 & FC-2 PX029UA**

W_p =	840 lbs	unit weight
B =	34.50 in	unit width
$d_{B\ dir\ anchors}$ =	32.92 in	dist btwn anchors (B dir.)
L =	30.25 in	unit length
$d_{L\ dir\ anchors}$ =	28.67 in	dist btwn anchors (L dir.)
H_{UNIT} =	77.50 in	unit height
H_{CG_EQUIP} =	51.67 in	center of gravity height (equip)
H_{CURB} =	0.00 in	curb height
H_{CG} =	51.67 in	(includes curb height)

a_p and R_p obtained from ASCE 7-16, Tables 13.5-1 and 13.6-1

a_p =	2.50	R_p =	6.00	I_p =	1.00	S_{DS} =	1.552
z =	0.00 ft	h =	11.80 ft	Ωo =	2.0	z is conservative	

$F_p = (0.4[(a_p)(S_{DS})(I_p)(1+2(z/h)]/R_p) \times W_p$ = 0.259 Wp

$F_{p\text{-}MIN} = 0.3(S_{DS})(I_p) \times W_p$ = 0.466 Wp

$F_{p\text{-}MAX} = 1.6(S_{DS})(I_p) \times (W_p)$ = 2.483 Wp

$F_v = 0.2(S_{DS})W_p$ = 0.310 Wp

STRENGTH	
$F_p = V_h$ =	**391 lbs**
$F_v = V_v$ =	**261 lbs**

SERVICE	
$0.7F_p = V_h$=	**274 lbs**
$0.7F_v = V_v$ =	**183 lbs**

Unit Anchorage:

Fp in "B" Direction 326

connections shear 4

connections tension 2

STRENGTH @ 1.0E		STRENGTH @ Ω		SERVICE	
$M_{OT} = V_h H_{CG}$ =	1684 lb-ft	$M_{OT} = \Omega V_h H_{CG}$ =	3368 lb-ft	$M_{OT} = V_h H_{CG}$ =	1179 lb-ft
$M_R = (0.9\text{-}0.2S_{ds})W_p(B/2)$ =	712 lb-ft	$M_R = (0.9\text{-}0.2S_{ds})W_p(B/2)$ =	712 lb-ft	$M_R = (0.6\text{-}0.14S_{ds})W_p(B/2)$ =	462 lb-ft
$T = (M_{OT} - M_R) / d_B$ =	354 lbs	$T = (M_{OT} - M_R) / d_B$ =	968 lbs	$T = (M_{OT} - M_R) / d_B$ =	261 lbs
T_{conn} = T / # conn tension =	177 lbs	T_{conn} = T / # conn tension =	484 lbs	T_{conn} = T / # conn tension =	131 lbs
$V_{conn} = V_h$ / # conn shear =	98 lbs	$V_{conn} = \Omega V_h$ / # conn shear =	196 lbs	$V_{conn} = V_h$ / # conn shear =	68 lbs

Fp in "L" Direction

connections shear 4

connections tension 2

STRENGTH @ 1.0E		STRENGTH @ Ω		SERVICE	
$M_{OT} = V_h H_{CG}$ =	1684 lb-ft	$M_{OT} = \Omega V_h H_{CG}$ =	3368 lb-ft	$M_{OT} = V_h H_{CG}$ =	1179 lb-ft
$M_R = (0.9\text{-}0.2S_{ds})W_p(L/2)$ =	624 lb-ft	$M_R = (0.9\text{-}0.2S_{ds})W_p(L/2)$ =	624 lb-ft	$M_R = (0.6\text{-}0.14S_{ds})W_p(L/2)$ =	405 lb-ft
$T = (M_{OT} - M_R) / d_L$ =	444 lbs	$T = (M_{OT} - M_R) / d_L$ =	1148 lbs	$T = (M_{OT} - M_R) / d_L$ =	324 lbs
T_{conn} = T / # conn tension =	222 lbs	T_{conn} = T / # conn tension =	574 lbs	T_{conn} = T / # conn tension =	162 lbs
$V_{conn} = V_h$ / # conn shear =	98 lbs	$V_{conn} = \Omega V_h$ / # conn shear =	196 lbs	$V_{conn} = V_h$ / # conn shear =	68 lbs

Max Connection Forces:

STRENGTH @ 1.0E	
Tmax =	222 lbs
Vmax =	98 lbs

STRENGTH @ Ω	
Tmax =	574 lbs
Vmax =	196 lbs
0.3*Vmax =	59 lbs

SERVICE	
Tmax =	162 lbs
Vmax =	68 lbs

Connection/Anchorage Notes:

Anchor unit w/ 2 connections per short side, 2 per long side, 4 total (conservative).
- Each connection is (1) 3/8" diameter Hilti KB-TZ2 CS w/ 1-1/2" embed.
- Hilti KB-TZ2 w/ 1-1/2" embed (1-7/8" nominal embed): Va = 1350 lbs, Ta = 940 lbs.
- Max Utilization is 62%.
- See attached Hilti output for anchor calcs.

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	FC-1 & FC-2	Date:	12/28/2023
Fastening point:	FC-1 & FC-2 (PX029UA)		

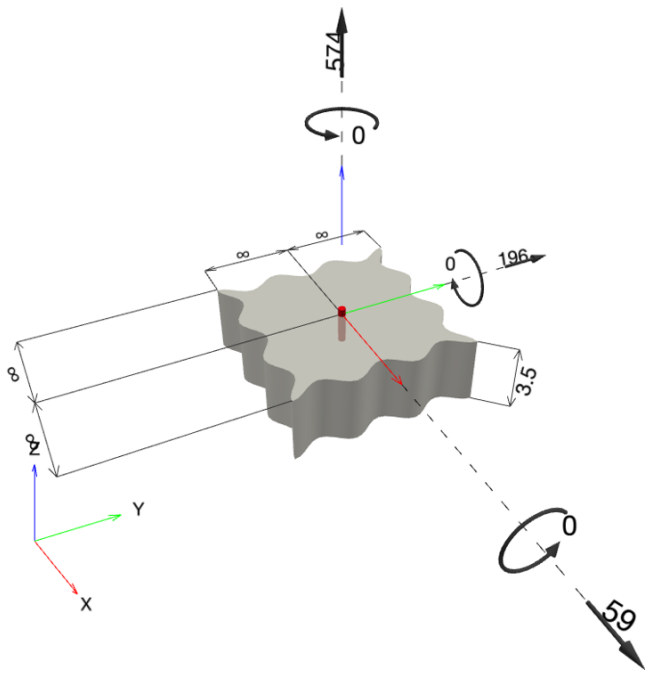
Specifier's comments:

1 Input data



Anchor type and diameter:	**Kwik Bolt TZ2 - CS 3/8 (1 1/2) hnom1**
Item number:	2210234 KB-TZ2 3/8x2 1/2
Effective embedment depth:	$h_{ef,act}$ = 1.500 in., h_{nom} = 1.875 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-4266
Issued I Valid:	12/17/2021 | 12/1/2023
Proof:	Design Method ACI 318-19 / Mech
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 3.500 in.
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.10.5.3 (d)) Shear load: yes (17.10.6.3 (c))

Geometry [in.] & Loading [lb, in.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Phone I Fax:	|	E-Mail:	
Design:	FC-1 & FC-2	Date:	12/28/2023
Fastening point:	FC-1 & FC-2 (PX029UA)		

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 574; V_x = 59; V_y = 196; M_x = 0; M_y = 0; M_z = 0;	yes	62

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Company:		Page:	3
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Design:	FC-1 & FC-2	Date:	12/28/2023
Fastening point:	FC-1 & FC-2 (PX029UA)		

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Concrete Breakout Failure	574	940	62 / -	OK
Shear	Pryout Strength	205	1,350	- / 16	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.610	0.152	5/3	49	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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Company:		Page:	4
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	FC-1 & FC-2	Date:	12/28/2023
Fastening point:	FC-1 & FC-2 (PX029UA)		

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

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04 – Condensing Unit Design

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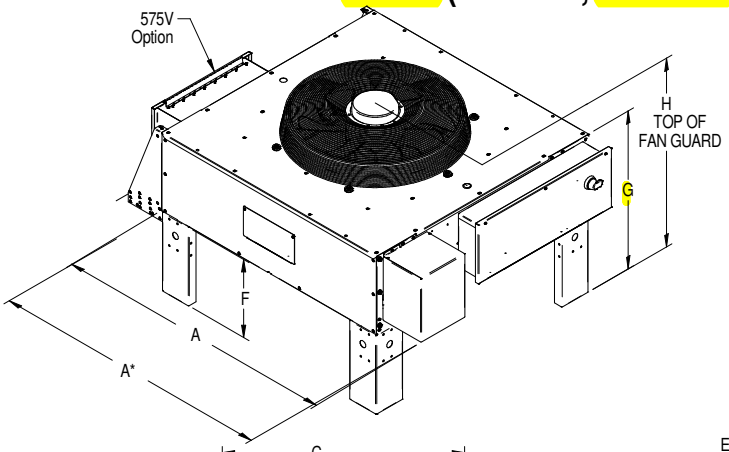
PROJECT ARUSD DISTRICT OFFICE SERVER ROOM UPGRADES
JOB NO. 2023-0347 DATE 01/03/2024
CLIENT JKAE BY KHK PAGE NO. 04.1

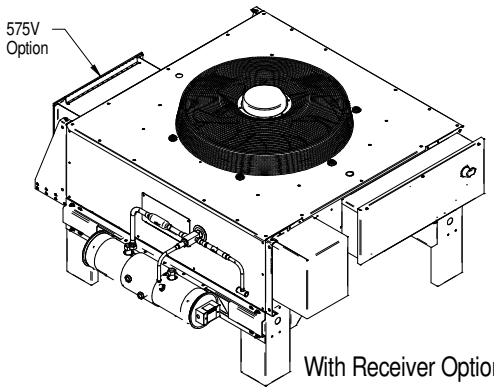
VERTIV.

LIEBERT® MC

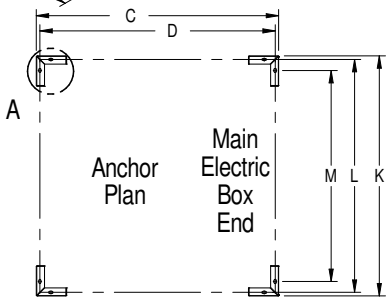
CABINET & ANCHOR DIMENSIONAL DATA

1 FAN (MCS028, MCM040, MCL055)

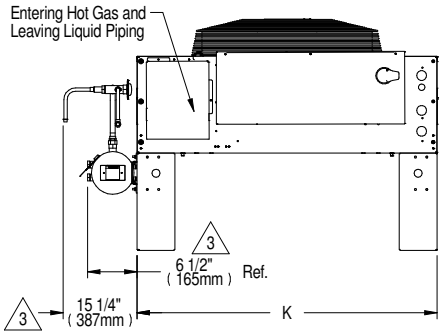




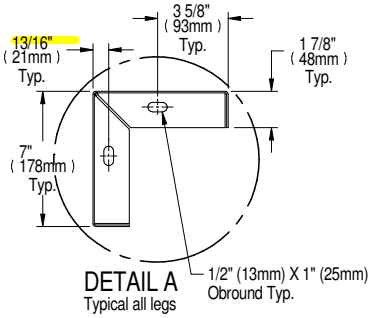
With Receiver Optio



Left Side of Unit



Front View (Liebert® Lee-Temp Shown)



DETAIL A
Typical all legs

MODEL NUMBER	F in. (mm) (LEG HEIGHT DIMENSIONS) △2			
	18 (457)	36 (914)	48 (1219)	60 (1524)
MCS028 MCM040				
DIM "G"	31-5/8 (803)	49-5/8 (1260)	61-5/8 (1565)	73-5/8 (1870)
DIM "H"	39-5/8 (1006)	57-5/8 (1464)	69-5/8 (1768)	81-5/8 (2073)
MCL055				
DIM "G"	35-7/8 (911)	53-7/8 (1368)	65-7/8 (1673)	77-7/8 (1978)
DIM "H"	43-5/8 (1108)	61-5/8 (1565)	73-5/8 (1870)	85-5/8 (2175)

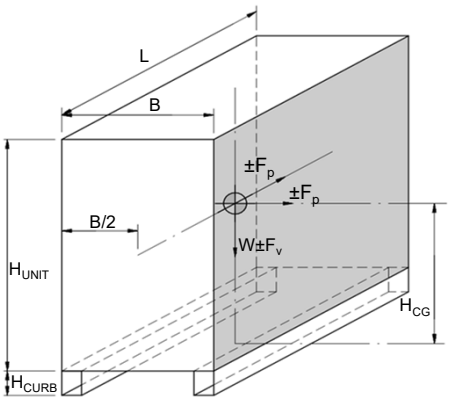
Note:
1. Vertiv recommends a clearance of 36" (915mm) on each side for proper operation and component access.
2. △ Cross Bracing required for legs longer than 18" (457.2mm). Quantity varies per model & options selected.
3. △ For Liebert® PDX w/EEV systems & unheated refrigerant receivers, 6-1/2" (165mm) is 9-1/4" (235mm) and 15-1/4" (387) is not applicable.

MODEL NUMBER	A in (mm)	~~A* in (mm) (575V ONLY)~~	C in (mm)	D in (mm)	K in (mm)	L in (mm)	M in (mm)
MCS028	50-5/8 (1287)	58-7/8 (1495)	44-1/8 (1120)	42-1/2 (1080)	42-1/2 (1080)	40-7/8 (1038)	35-7/8 (910)
MCM040	57-3/16 (1453)	65-3/8 (1661)	48 (1219)	46-5/16 (1177)	46 (1168)	44-3/8 (1127)	39-5/16 (999)
MCL055	68 (1727)	77 (1956)	56 (1422)	54-3/8 (1381)	55-1/2 (1410)	53-7/8 (1368)	48-3/4 (1238)

PROJECT	ARUS DO SERVER ROOM UPGRADES		
PROJECT NO.	2023-0347	DATE	1/3/2024
CLIENT	JKAE	BY	KHK	SHEET NO.	04.2

Base Mounted Equipment Anchorage Design - SEISMIC

ASCE 7-16, Ch. 13



Unit Identification: **CU-1 & CU-2 MCM040**

W_p =	312 lbs	unit weight
B =	48.00 in	unit width
$d_{B\ dir\ anchors}$ =	47.19 in	dist btwn anchors (B dir.)
L =	46.00 in	unit length
$d_{L\ dir\ anchors}$ =	45.19 in	dist btwn anchors (L dir.)
H_{UNIT} =	31.63 in	unit height
H_{CG_EQUIP} =	23.72 in	center of gravity height (equip)
H_{CURB} =	8.00 in	curb height
H_{CG} =	31.72 in	(includes curb height)

a_p and R_p obtained from ASCE 7-16, Tables 13.5-1 and 13.6-1

a_p =	2.50	R_p =	6.00	I_p =	1.00	S_{DS} =	1.552
z =	0.00 ft	h =	11.80 ft	Ωo =	2.0	z is conservative	

$F_p = (0.4[(a_p)(S_{DS})(I_p)(1+2(z/h)]/R_p) \times W_p =$ 0.259 Wp

$F_{p\text{-}MIN} = 0.3(S_{DS})(I_p) \times W_p =$ 0.466 Wp

$F_{p\text{-}MAX} = 1.6(S_{DS})(I_p) \times (W_p) =$ 2.483 Wp

$F_v = 0.2(S_{DS})W_p =$ 0.310 Wp

STRENGTH	
$F_p = V_h$ =	**145 lbs**
$F_v = V_v$ =	**97 lbs**

SERVICE	
$0.7F_p = V_h$=	**102 lbs**
$0.7F_v = V_v$ =	**68 lbs**

Unit Anchorage:

Fp in "B" Direction

connections shear 4

connections tension 2

STRENGTH @ 1.0E		STRENGTH @ Ω		SERVICE	
$M_{OT} = V_h H_{CG}$ =	384 lb-ft	$M_{OT} = \Omega V_h H_{CG}$ =	768 lb-ft	$M_{OT} = V_h H_{CG}$ =	269 lb-ft
$M_R = (0.9\text{-}0.2S_{ds})W_p(B/2)$ =	368 lb-ft	$M_R = (0.9\text{-}0.2S_{ds})W_p(B/2)$ =	368 lb-ft	$M_R = (0.6\text{-}0.14S_{ds})W_p(B/2)$ =	239 lb-ft
$T = (M_{OT} - M_R) / d_B$ =	4 lbs	$T = (M_{OT} - M_R) / d_B$ =	102 lbs	$T = (M_{OT} - M_R) / d_B$ =	8 lbs
T_{conn} = T / # conn tension =	2 lbs	T_{conn} = T / # conn tension =	51 lbs	T_{conn} = T / # conn tension =	4 lbs
$V_{conn} = V_h$ / # conn shear =	36 lbs	$V_{conn} = \Omega V_h$ / # conn shear =	73 lbs	$V_{conn} = V_h$ / # conn shear =	25 lbs

Fp in "L" Direction

connections shear 4

connections tension 2

STRENGTH @ 1.0E		STRENGTH @ Ω		SERVICE	
$M_{OT} = V_h H_{CG}$ =	384 lb-ft	$M_{OT} = \Omega V_h H_{CG}$ =	768 lb-ft	$M_{OT} = V_h H_{CG}$ =	269 lb-ft
$M_R = (0.9\text{-}0.2S_{ds})W_p(L/2)$ =	353 lb-ft	$M_R = (0.9\text{-}0.2S_{ds})W_p(L/2)$ =	353 lb-ft	$M_R = (0.6\text{-}0.14S_{ds})W_p(L/2)$ =	229 lb-ft
$T = (M_{OT} - M_R) / d_L$ =	8 lbs	$T = (M_{OT} - M_R) / d_L$ =	110 lbs	$T = (M_{OT} - M_R) / d_L$ =	11 lbs
T_{conn} = T / # conn tension =	4 lbs	T_{conn} = T / # conn tension =	55 lbs	T_{conn} = T / # conn tension =	5 lbs
$V_{conn} = V_h$ / # conn shear =	36 lbs	$V_{conn} = \Omega V_h$ / # conn shear =	73 lbs	$V_{conn} = V_h$ / # conn shear =	25 lbs

Max Connection Forces:

STRENGTH @ 1.0E	
Tmax =	4 lbs
Vmax =	36 lbs

STRENGTH @ Ω	
Tmax =	55 lbs
Vmax =	73 lbs
0.3*Vmax =	22 lbs

SERVICE	
Tmax =	5 lbs
Vmax =	25 lbs

Connection/Anchorage Notes:

Anchor unit w/ 2 connections per short side, 2 per long side, 4 total (conservative).
- Each connection is (1) 3/8" diameter Hilti KB-TZ2 SS 304 w/ 1-1/2" embed.
- Hilti KB-TZ2 w/ 1-1/2" embed (1-7/8" nominal embed): Va = 940 lbs, Ta = 1361 lbs.
- Max Utilization is 12%.
- See attached Hilti output for anchor calcs.

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	CU1 & CU-2	Date:	12/28/2023
Fastening point:	CU-1 & CU-2 (MCM040)		

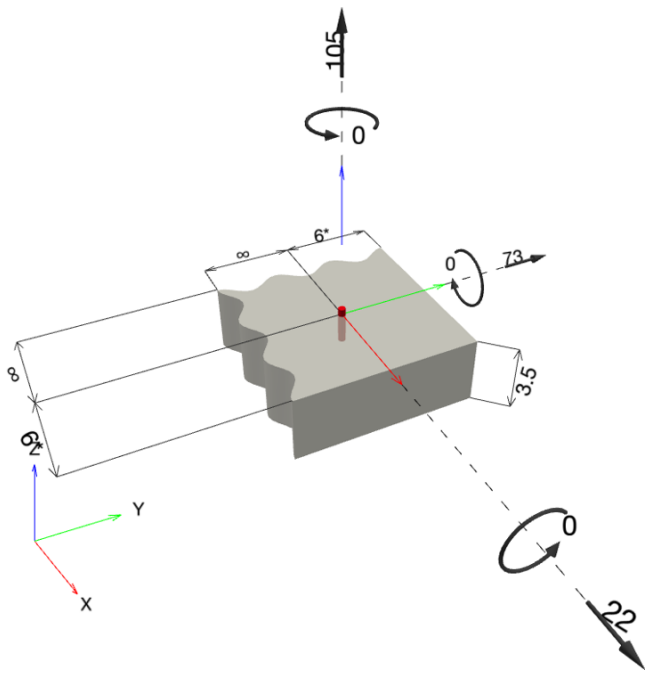
Specifier's comments:

1 Input data



Anchor type and diameter:	**Kwik Bolt TZ2 - SS 304 3/8 (1 1/2) hnom1**
Item number:	2210242 KB-TZ2 3/8x3 SS304
Effective embedment depth:	$h_{ef,act}$ = 1.500 in., h_{nom} = 1.875 in.
Material:	AISI 304
Evaluation Service Report:	ESR-4266
Issued I Valid:	12/17/2021 | 12/1/2023
Proof:	Design Method ACI 318-19 / Mech
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 3.500 in.
Installation:	**hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.10.5.3 (d)) Shear load: yes (17.10.6.3 (c))

Geometry [in.] & Loading [lb, in.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	CU1 & CU-2	Date:	12/28/2023
Fastening point:	CU-1 & CU-2 (MCM040)		

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 105; V_x = 22; V_y = 73; M_x = 0; M_y = 0; M_z = 0;	yes	12

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Phone I Fax:	|	E-Mail:	
Design:	CU1 & CU-2	Date:	12/28/2023
Fastening point:	CU-1 & CU-2 (MCM040)		

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Concrete Breakout Failure	105	940	12 / -	OK
Shear	Concrete edge failure in direction y+	76	1,361	- / 6	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.112	0.056	5/3	4	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	CU1 & CU-2	Date:	12/28/2023
Fastening point:	CU-1 & CU-2 (MCM040)		

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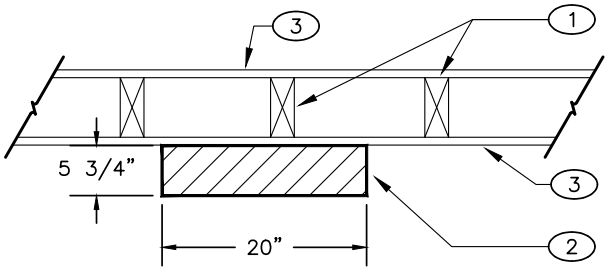
05 – Electrical Panel Design

BUEHLER

PROJECT	ARUSD DISTRICT OFFICE SERVER ROOM UPGRADES				
JOB NO.	2023-0347			DATE	01/03/2024
CLIENT	JKAE	BY	KHK	PAGE NO.	05.1

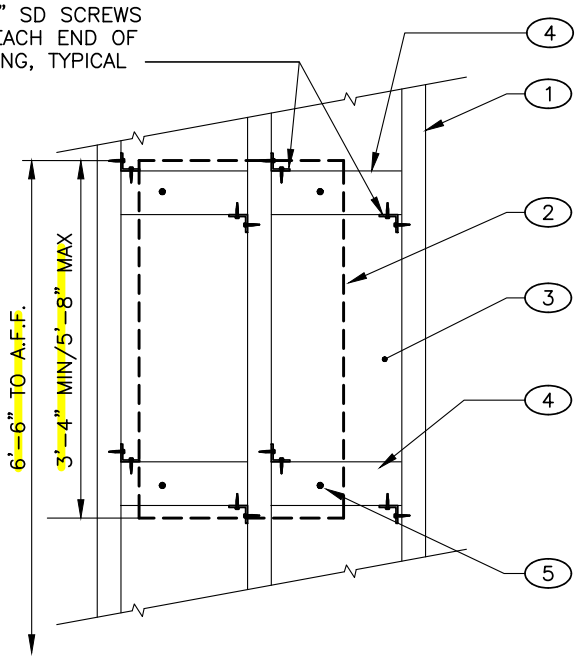
KEY NOTES:

1. WOOD STUD
2. SURFACE MOUNTED PANEL CABINET, (SEE NOTE #1 FOR PANEL WEIGHT)
3. SHEET ROCK OR OTHER WALL SURFACE MATERIAL (SEE ARCH. DRAWINGS)
4. 4X MIN. WOOD BLOCK, FASTENED TO VERTICAL STUDS AT EACH END.
5. 5/16" LAG SCREWS WITH 2 1/2" MIN. EMBED TO BLOCK, (4) LAG SCREWS TOTAL. (INSTALLED BY ELECTRICAL CONTRACTOR)



TOP VIEW

PROVIDE:
SIMPSON A34 CLIPS
ATTACHED WITH
#9x1-1/2" SD SCREWS
STAGGER EACH END OF
4X BLOCKING, TYPICAL



NOTES:

A. PANEL WEIGHT:

REGULAR: 150 LBS.
LARGE: 250LBS. MAX

B. MOUNT TERMINAL CABINETS, J-BOXES, ETC., SIMILAR TO 30 CIRCUIT PANELBOARD.

C. REFER TO PANEL SCHEDULE SHEET Ex.x, FOR SIZES OF PANELS.

D. CENTER OF GRAVITY OF CABINET FROM TOP OF FLOOR = ±50".

FRONT VIEW

FILENAME

SURFACE PANELBOARD/CABINET
WOOD FRAMING MOUNTING DETAIL

NTS

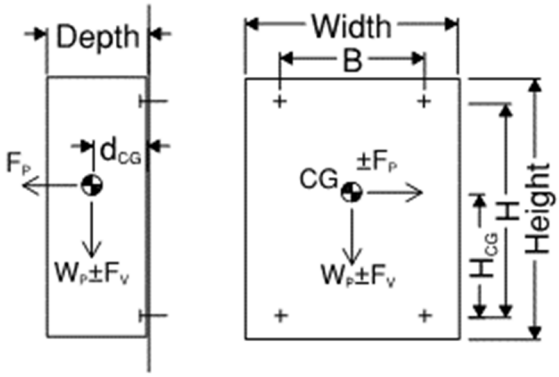
5

From E0.0.2

PROJECT	ARUSD DISTRICT OFFICE SERVER ROOM UPGRADES				
JOB NO.	2023-0347			DATE	01/03/2024
CLIENT	JKAE	BY	KHK	PAGE NO.	05.2

EQUIPMENT ANCHORAGE CALCULATION (ASCE 7-16)

;



Unit Identification; UnitID = **"Wall Panel"**

Unit Height; Height = **68** in
Unit Width; Width = **20** in
Unit Depth; Depth = **5.75** in
Unit Weight; W_p = **250** lb

Width Between Connections; B = 18 in;
Height Between Connections; H = 38 in;
Height to Center of Gravity; H_{CG} = **50** in
Depth to Center of Gravity; d_{CG} = **2.88** in

Seismic Load Parameters (ASCE 7-16)

a_p = **2.5**; R_p = **6.0**; Ω_0 = **2.0**; I_p = **1.0**
S_{ds} = **1.552**; z = **6** ft; h = **11.8** ft

Seismic Forces

$F_{pcalc} = 0.4*a_p*S_{ds}*I_p*(1+2*(z/h))/R_p$ = **0.522**; * W_p
$F_{pmin} = 0.3*S_{ds}*I_p$ = **0.466**; * W_p; $F_{pmax} = 1.6*S_{ds}*I_p$ = **2.483**; * W_p
Controlling Horizontal Force; F_p = **0.522**; * W_p
Vertical Force; $F_v = 0.2*S_{ds}$ = **0.310**; * W_p

Check Connections of Equipment to Wall

ASD Load Combination; D_F = **1.0**; E_H = **0.7**; E_V = **0.7**

Total Number of Connections to Backing; N = **4**
Number of Connections in Top Row; N_T = **2**
Number of Connections Each Side; N_S = **2**
Increase to Loads to Connections Due to CG Offset; Inc = abs((H_{CG}/H - 0.5)/0.5) = **1.63**

Tension from Dead Loads; $T_D = D_F*W_p*d_{CG}/(H*N_T)$ = **9** lbs
Tension from Fv; $T_{Fv} = E_V*F_v*W_p*d_{CG}/(H*N_T)$ = **2** lb
Tension from Fp acting Front to Back; $T_1 = E_H*F_p*W_p/N*(1+Inc)$ = **60** lb
Tension from Fp acting Side to Side; $T_2 = E_H*F_p*W_p*d_{CG}/(B*N_S)*(1+Inc)$ = **19** lb
Controlling Tension; $T_{conn} = T_D + T_{Fv} + \max(T_1+0.3*T_2, 0.3*T_1+T_2)$ = **77** lb

Shear from Dead Loads; $V_D = D_F*W_p/N*(1+Inc)$ = **164** lb
Shear from Fv; $V_{Fv} = E_V*F_v*W_p/N*(1+Inc)$ = **36** lb
Shear from Fp acting Front to Back; V_1 = 0 lb
Shear from Fp acting Side to Side; $V_2 = (E_H*F_p*W_p)/N*(1+Inc)$ = **60** lb
Controlling Shear; $V_{conn} = \text{sqrt}((V_D + V_{Fv})^2+(\max(V_1+0.3*V_2, 0.3*V_1+V_2))^2)$ = **209** lb

Check Connection to Backing

Connection;	Conn = **"P1000 Unistrut Channel Nut - 3/8" Dia."**
Allowable Tension;	T_{all} = **1000** lb
Allowable Shear;	V_{all} = **800** lb
Utilization;	$U = V_{conn}/V_{all} + T_{conn}/T_{all}$ = **0.34**; **Check** = **"OK"**

Check Strut

Stud Spacing;	Spacing = **16** in
Loading Demands;	Bm = $T_{conn} + V_D + V_{Fv}$ = **278** lb
	Col = V_2 = **60** lb
Strut;;	Strut = **"P1000"**
Allowable “beam” loading;	Bm_A = 1690 lb
Allowable “column” loading;	Col_A = 3550 lb
Demand Capacity Ratio;	DCR = Bm / Bm_A + Col / Col_A = **0.18**; **Check** = **"OK"**

Check Strut to Stud Connection

Number of Connections Backing to Stud;	N_{StoS} = **4**
Demands;	T = T_{conn}/N_{StoS} = **19** lb
	V = V_{conn}/N_{StoS} = **52** lb
Connection;	ScrewTStud = **"3/8" Lag Screws with min 2-1/2" embed"**
Allowable Tension;	$T_{StoSall}$ = **845** lb
Allowable Shear;	$V_{StoSall}$ = **1268** lb
Utilization;	$U = V/V_{StoSall} + T/T_{StoSall}$ = **0.06**; **Check** = **"OK"**

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PROJECT MANUAL

ALUM ROCK UNION
SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES

Technical Specifications

ALUM ROCK UNION SCHOOL DISTRICT

SAN JOSE, CALIFORNIA

1/5/24

JK Architecture Engineering
Project Number # 23-525

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07 62 00 Sheet Metal Flashing and Trim
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SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General description of scope

1. Demolition and removal of selected portions of buildings or structures.

a. Including but not limited to:

1) Existing roofing replacement Building 100.

2) HVAC upgrades at Superintendent Office Wing – Building 100

2. Demolition and removal, disconnecting, capping and sealing, and abandoning in place of selected site elements.

3. Salvage of existing items to be reused or recycled.

4. Hazardous material remediation

5. Abandoning in-place and/or removing below-grade construction.

1.2 RELATED SECTIONS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

B. Section 01 21 00 – Allowances

C. Section 01 22 00 - Unit Prices

D. Section 00 31 26 - Hazardous Material Information

E. Section 01 10 00 - Summary of Work - for use of the premises and phasing requirements

F. Section 01 32 00 - Construction Progress Documentation

G. Section 01 45 00 - Quality Control

H. Section 01 50 00 - Temporary Facilities and Controls

I. Section 01 73 00 - Execution Requirements

J. Section 01 74 19 - Construction Waste Management and Disposal

K. Section 01 77 19 - Closeout Requirements

L. Section 31 23 33 - Trenching and Backfilling

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage.

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C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

A. ASSE A10.6 – Safety and Health Program Requirements for Demolition Operations

B. 40 CFR 82 – Protection of Stratospheric Ozone

C. All applicable EPA notification regulations.

D. All applicable OSHA regulations.

E. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations

F. Resilient Floor Covering Institute (RFCI) - Recommended Work Practices for the Removal of Resilient Floor Coverings

Website Link: https://rikett.net/wp-content/uploads/2016/05/RFCI-Recommended-Work-Practices-for-the-Removal-of-Resilient-Flooring.pdf

1.5 SUBMITTALS

A. Submittals: Provide submittals per Section 01 33 00, “Submittal Procedures”.

B. Qualification Data: For refrigerant recovery technician.

C. Engineering Survey: Submit engineering survey of condition of building.

D. Proposed Protection Measures:

1. Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property.

2. Indicate proposed locations and construction of barriers.

3. Adjacent Buildings: Where damage to adjacent structures is possible, detail special measures proposed to protect adjacent buildings to remain, including means of egress from those buildings.

E. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.

2. Interruption of utility services: Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.

5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

F. Building Demolition Plans: Drawings shall indicate the following:

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1. Locations of temporary protection, and means of egress protection, if applies, for adjacent occupied buildings.

G. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of work.

H. Pre demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.

1. Submit before the Work begins.

2. Comply with Section 01 32 33, “Photographic Documentation.

I. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

J. Closeout Submittals:

1. Submittals: Provide submittals per Section 01 77 19, “Closeout Requirements”

2. Inventory: Submit a list of items that have been removed and salvaged.

3. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

1. Comply with ANSI A10.6 and NFPA 241.

2. Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

3. Comply with all OSHA regulations.

4. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.7 PRE-INSTALLATION CONFERENCE

A. Pre-demolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review structural load limitations of existing structure.

3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

5. Review areas where existing construction is to remain and requires protection.

1.8 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

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1.9 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

1. Before selective demolition, Owner will remove the following items:

a. **<insert items to be removed by Owner>**.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.

2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use – See Section 00 31 26, "Hazardous Material Information". Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.

2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.

F. Storage or sale of removed items or materials on-site is not permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.11 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so

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as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

1. **<insert warranted system>.**

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.

E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of measured drawings

1. Comply with requirements specified in Section 01 32 33, "Photographic Documentation."

2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

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A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

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4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00, "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 1 hours after flame-cutting operations
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19, "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to substrate.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site. Recycle or dispose of them according to Section 01 74 19, "Construction Waste Management and Disposal.".

1. Do not allow demolished materials to accumulate on-site.

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2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 01 74 19, "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.9 SELECTIVE DEMOLITION SCHEDULE

A. Remove: <insert description of items and construction to remove>.
B. Remove and Salvage: <insert description of items to remove and salvage>.
C. Remove and Reinstall: <insert description of items to remove and reinstall>.
D. Existing to Remain: <insert description of items to remain>.
E. Dismantle: <insert description of items to be removed>.

END OF SECTION

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SECTION 07 54 16

KETONE ETHYLENE ESTER (KEE) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanically-fastened thermoplastic KEE roofing system on wood deck, including:

2. Roof insulation.

3. Roof insulation cover board.

4. Walkway material.

B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers and blocking.

2. Division 07 Section "Sheet Metal Flashing and Trim" for shop-formed sheet metal items including roof drainage system items, roof penetration flashings, base and counterflashings and reglets, and formed copings and roof edge metal items.

1.2 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in applicable edition of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review drawings and specifications.

3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.

4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

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5. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.

6. Review structural loading limitations of roof deck during and after roofing.

7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

8. Review governing regulations and requirements for insurance and certificates if applicable.

9. Review temporary protection requirements for roofing system during and after installation.

10. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Sustainable Design Submittals:

1. Product Test Reports for Solar Reflectance: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.

2. Product Data and Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-VOC/low-emitting materials.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.

2. Tapered insulation, including slopes and crickets.

3. Roof plan showing types and orientation of roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing if applicable.

4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Product Certificate: Submit certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

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B. Qualification Data: For Installer, Manufacturer and Roofing Inspector.

1. Include letter from Manufacturer written for this Project indicating approval of Installer.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of compliance with performance requirements.

a. Include: UL listing certificate.

2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.

D. Warranties: Unexecuted sample copies of special warranties.

E. Inspection Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1. Submit reports within 48 hours after inspection.

1.6 CLOSEOUT SUBMITTALS

A. Executed copies of warranties.

B. Maintenance Data: To include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section, UL listed for roofing systems comparable to that specified for this Project, with minimum five years' experience in manufacture of thermoplastic roof membrane products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Product data, including certified independent test data indicating compliance with requirements.

b. Samples of each component.

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c. Sample submittal from similar project.

d. Project references: Minimum of five installations of specified products not less than five years old, with Owner and Architect contact information.

e. Sample warranty.

2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.

3. Approved manufacturers must meet separate requirements of Submittals Article.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.

2. An independent party certified as a Registered Roof Observer by the International Institute of Building Enclosure Consultants (formerly the Roof Consultants Institute) retained by the Contractor or the Manufacturer and approved by the Manufacturer.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site access to manufacturer's written recommendations and instructions for installation of products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

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1.9 PROJECT / FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.

3. Remove temporary plugs from roof drains at end of each day.

4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.10 WARRANTY

A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.

1. Form of Warranty: Manufacturer's standard warranty form.

2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.

3. Warranty Period: 30 years from date of completion with no provisions for intermediate renewals needed to achieve warranty term.

B. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.

1. Inspections to occur in the following years: 2, 5, 10, 15, 20 and 25 following completion.

C. Installer Warranty: Installer's warranty signed by Installer, as follows.

1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.

2. Scope of Warranty: Work of this Section.

3. Warranty Period: 2 years from date of completion.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com (Local Rep: Dan Lajeunesse) that are named in other Part 2 articles. Provide specified products or Architect approved equal.

1. Manufacturers of comparable products: Approved by Architect prior to bid.

B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 10,000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.

2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746/D3746M, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

B. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-16 and applicable code.

1. Zone 1 (Field-of-Roof) Uplift Pressure: 41.7 psf.

2. Zone 2 (Perimeter) Uplift Pressure: 54.9 psf, located within 9 ft. of roof perimeter.

3. Zone 3 (Corner) Uplift Pressure: 74.8 psf, located within 3 ft. of outside corners.

C. Flashings and Fastening: Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:

1. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
2. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.
3. Comply with requirements of Division 07 Section "Sheet Metal Flashing and Trim".

D. Exterior Fire-Test Exposure: ASTM E108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

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E. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 MATERIALS, GENERAL

A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

2.4 THERMOPLASTIC MEMBRANE MATERIALS

A. KEE Roof Membrane:

1. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced sheet, ASTM D6754.

a. Basis of design product: Tremco, TremPly KEE Single Ply Roof Membrane.
b. Breaking Strength, minimum, ASTM D751: Machine direction, 500 lbf/in (87 kN/m); Cross machine direction, 400 lbf/in (70 kN/m).
c. Tear Strength, minimum, ASTM D751: Machine direction,120 lbf (162 N/m); Cross machine direction, 140 lbf (190 N/m).
d. Elongation at Break, ASTM D751: 20 percent.
e. Dynamic Impact/Puncture Resistance, ASTM D5635: 30 J, minimum.
f. Minimum Membrane Thickness, nominal, less backing, ASTM D751: 60 mils (1.5 mm).
g. Thickness over fiber, optical method: 0.014 inches (0.355 mm).
h. Accelerated Weathering, ASTM G155 and ASTM G154: Not greater than 15,000 hr., no cracking or crazing.
i. Abrasion Resistance, ASTM D3389: Not greater than 2,000 cycles, H-18 wheel, 1,000 g load.
j. Color: White.
k. Solar Reflectance Index (SRI), ASTM E1980: 110 (White, initial), 86 (White, 3-yr aged).

B. Sheet Flashing: Manufacturer's standard, smooth-backed, sheet flashing of same material, type, reinforcement, thickness and color as KEE roof membrane.

2.5 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Plastic Foam Adhesives: 50 g/L.

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b. Single-Ply Roof Membrane Sealants: 450 g/L.
c. Nonmembrane Roof Sealants: 300 g/L.
d. Sealant Primers for Nonporous Substrates: 250 g/L.
e. Sealant Primers for Porous Substrates: 775 g/L.

3. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Flashing Membrane Adhesive:

1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE smooth-backed single ply membranes and flashings to substrates.

a. Basis of design product: Tremco, TremPly KEE LV Bonding Adhesive.

b. VOC, maximum, ASTM D 3960: 200 g/L.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.

D. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, prepunched.

E. Metal Stress Plates: Manufacturer's standard AZ50 Galvalume-coated steel formed plates, 0.047 inch thick, with radial corners and membrane-engaging barbs engineered to enhance wind resistance for mechanically-attached KEE membrane roofing systems. FMG approved.

1. Product: TremPly KEE Plus Stress Plates.

F. Joint Sealant: Elastomeric joint sealant compatible with roofing materials, with movement capability appropriate for application.

1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.

a. Basis of design product: Tremco, TremSEAL Pro.
b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.
c. Hardness, Shore A, ASTM C661: 40.
d. Adhesion to Concrete, ASTM C794: 35 pli.
e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).
f. Color: White.

G. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

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H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.6 ROOF INSULATION MATERIALS

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from insulation manufacturer's standard sizes, suitable for application, and of thicknesses indicated.

1. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

B. Roof Insulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:

1. Board Insulation, Polyisocyanurate: CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces, ASTM C1289 Type II Class 1.

a. Basis of design product: Atlas ACFoam II Insulation.
b. Compressive Strength, ASTM D1621: Grade 2: 20 psi (138 kPa).
c. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

2. Tapered Board Insulation, Polyisocyanurate: Tapered ACFoam II Insulation, Type II, Class 1.

2.7 ROOF INSULATION ACCESSORIES

A. Cover Board:

1. Gypsum panel, glass-mat-faced, ASTM C1177/C1177M.

a. Basis of design product: Georgia Pacific Dens Deck.

b. Thickness: ½ inch (6 mm).

B. Roof Insulation Adhesive:

1. Adhesive manufactured or approved by roofing manufacturer.

C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

D. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

E. Insulation Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

2.8 WALKWAY MATERIALS

A. Walkway / Protection Mat Material:

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1. Walkway roll, reinforced PVC/TPA membrane roll with serrated slip-resistant surface, fabricated for heat welding to compatible PVC/TPA membrane surface.

    a. Basis of design product: Tremco, TPA Walkway Roll.
    b. Roll Size: 36 inches by 60 foot (914 mm by 18.3 m).
    c. Thickness / Color: Gray, 0.072 inch (2 mm).
    d. Tensile, Grab ASTM D751: 200 lbf (890 N).
    e. Tear Strength, Tongue : 45 lbf (200N).
    f. Low Temp Flex: -40 deg F. (-40 deg C.).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3. Existing Prepared Roof Substrate: Verify that existing insulation and substrate is sound and dry. Refer to requirements of Division 07 Section "Preparation for Re-Roofing."

4. Wood Roof Deck: Verify that deck is sound and dry and securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.

5. Verify that the existing substrate is sound and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s written instructions and approved details.

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B. Install wood cants, blocking, curbs, and nailers in accordance with requirements of Division 06 Section "Miscellaneous Rough Carpentry."

C. NRCA Installation Details: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations; modify as required to comply with manufacturer's approved details and perimeter fastening requirements of FM Global references if applicable.

3.4 INSULATION INSTALLATION

B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

C. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

D. Tapered Insulation and Crickets: Install tapered insulation under area of roofing to conform to slopes indicated.

1. Where crickets are indicated or required to provide positive slope to drain, make slope of crickets minimum of two times the roof slope, not less than 1/4 inch in 12 inches (1:48).

E. Install insulation under area of roofing to achieve the required thickness. Where overall insulation thickness is 2.7 inches (70 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.

1. Flat Insulation System on Sloped Roof Deck: Install insulation at minimum thickness as follows:

a. Minimum Continuous Insulation R-value: Not less than 10.

2. Insulation Drain Sumps: Tapered insulation sumps, not less than 2 by 2 ft. (600 by 600 mm), sloped to roof drain; sump to maximum depth of not more than 1 inch (25 mm) less than the Project-stipulated continuous insulation thickness based upon code requirements.

F. Trim surface insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

G. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

2. Loose lay base layer of insulation.

H. Cover Boards: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together.

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1. Mechanically fasten cover boards using 8 fasteners per 4x8 board.

3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

A. Mechanically fasten membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten or adhere membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. In-Seam Attachment: Secure one edge of membrane sheet using fastening plates or metal battens centered within membrane seam and mechanically fasten membrane sheet to roof deck.

G. Metal Stress Plate Installation:

1. Locate plates in grid pattern in accordance with membrane manufacturer's instructions.

2. Install plates in straight rows in the specified number and spacing to achieve the required wind uplift resistance in the main field, edges and corners of the roof.

3. Install plates and separation pads using fasteners that comply with the specified applicable building code wind uplift rating and the fastener and membrane manufacturer's requirements. Ensure that all fasteners are properly driven normal to the surface of the sub-structure. Do not over-drive fasteners; plates that are recessed into and/or not flush with the surface of the insulation are not acceptable.

H. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.

2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

I. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

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3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Seal top termination of base flashing with a metal termination bar and a continuous bead of joint sealant.

3.7 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 FIELD QUALITY CONTROL

A. Roofing Inspector: Contractor shall engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

1. Engage a qualified roofing inspector for a minimum of 5 full-time days on site to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with applicable criteria established in NRCA's "Quality Control and Quality-assurance Guidelines for the Application of Membrane Roofing Systems."

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and and Owner.

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B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 16

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SECTION 07 56 00

PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Roof tear-off.
2. Removal of base flashings.
3. Roof replacement preparation.

B. Related Requirements:

1. Division 01 – General Requirements, for use of the premises and phasing requirements, and for restrictions on use of the premises due to Owner or tenant occupancy.
2. Division 01 – General Requirements, for photographs taken before and during re-roofing preparation.
3. Division 01 – General Requirements, for temporary construction and environmental protection measures.
4. Division 01 – General Requirements, for roof rehabilitation requirements.
5. Section 07 62 00 "Sheet Metal Flashing and Trim" for formed metal roof flashings and counter-flashings.

1.3 DESCRIPTION OF WORK

A. Roofing preparation Work consists of the following:

1. Roof areas indicated for Built-Up Roofing assembly removal and replacement:
   a. Preparation for: Roof replacement.

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b. Existing Roof Type: 4-ply Built-Up Roofing.

c. Existing Deck Type: Plywood sheathing deck.

d. Roof system tear-off down to substrate / deck.

e. Removal and reinstallation of indicated components, accessories, and equipment as indicated on drawings.

2. Roof Areas indicated for Keytone Ethylene Ester KEE roof replacement:

a. Preparation for: Roofing replacement.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.5 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Membrane Roofing System: Roofing system identified above, including roofing membrane, roof insulation, surfacing, and components and accessories between deck and roofing membrane.

C. Roof Re-Cover Preparation: Existing roofing membrane that is to remain and be prepared for reuse or rehabilitation.

D. Roof Tear-Off: Removal of existing membrane roofing system from deck.

E. Partial Roof Tear-Off: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system.

F. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

G. Existing to Remain: Existing items of construction that are not indicated to be removed.

H. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

I. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

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J. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

K. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

L. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

M. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.7 INFORMATIONAL SUBMITTALS

A. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection and for dust control. Indicate proposed locations and construction of barriers.

C. Schedule of Re-Roofing Preparation Activities: Indicate the following:

1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Coordination of Owner's continuing occupancy of portions of existing building.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos- containing material, by a landfill facility licensed to accept hazardous wastes.

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1.8 QUALITY ASSURANCE

A. Installer Qualifications: Installer of new membrane roofing system.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof- mounted equipment.

2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:

a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.

b. Procedures for salvaging and recycling of demolition and construction waste.

c. Temporary protection requirements for existing roofing system that is to remain during and after installation.

d. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.

e. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.

g. Structural loading limitations of deck during reroofing.

h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.

i. HVAC shutdown and sealing of air intakes.

j. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.

k. Asbestos removal and discovery of asbestos-containing materials.

l. Governing regulations and requirements for insurance and certificates if applicable.

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m. Existing conditions that may require notification of Architect before proceeding.

1.9 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 48 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.

2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.

B. Protect building to be reroofed or restored, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.

E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

F. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

G. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.

2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.

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PART 2 - PRODUCTS

2.1 INFILL MATERIALS

A. Use infill materials matching existing membrane roofing system materials unless otherwise indicated.

2.2 TEMPORARY ROOFING MATERIALS

A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.3 TEMPORARY ROOF DRAINAGE

A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.4 AUXILIARY REROOFING MATERIALS

A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.

B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

C. Metal Flashing Sheet: Metal flashing sheet is specified in Section 07 62 00 "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

A. Existing Roof Protection: Protect existing membrane roofing system that is indicated not to be reroofed.

1. Limit traffic and material storage to areas of existing roofing membrane that have been protected.

2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.

B. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.

1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

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2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.

C. Air Intake Shutdown: Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

D. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

E. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

F. Verify that rooftop utilities and service piping have been shut off before beginning the Work.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.

B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.

1. Remove cover boards and roof insulation.

2. Remove fasteners from deck or cut fasteners off slightly above deck surface.

3.3 DECK PREPARATION

A. Inspect deck after tear-off of membrane roofing system.

B. Roof Deck: If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.

1. Deck Securement: Provide additional deck securement as indicated on Drawings.

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2. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.4 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site is not permitted.

B. Transport and legally dispose of demolished materials off Owner's property.

3.5 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION

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SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1. SECTION INCLUDES

A. Coping, parapet, and cap flashings, if not included in other sections.

B. Reglets and counter-flashings.

E. Misc. other sheet metal flashings and trims not specifically described above – coordinate with work provided in other sections.

F. Steel Pipe Downspouts.

1.3 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

A. .ANSI SPRI ED-1 – Design Standard for Edge Systems Used with Low Slope Roofing Systems.

B. ASTM B32 - Standard Specification for Solder Metal

C. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

D. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

F. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free

H. FS O-F-506 – Federal Specification: Flux Soldering: Past and Liquid.

I. NRCA (National Roofing Contractors Association)-Roofing Manual.

J. SMACNA - Architectural Sheet Metal Manual.

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1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Division 01 – General Requirements.

B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.

C. Submit manufacturer's installation instructions under provisions of Division 01 – General Requirements.

1.5 QUALITY ASSURANCE

A. Fabricator: Company specializing in sheet metal flashing work with 5 years minimum experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products under provisions of Division 01 – General Requirements.

B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.

C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 MOCKUPS

A. Provide mockups for Architect’s review and approval of critical transitions (corners, edge conditions, etc.)

B. Provide mockups of all profiles listed in drawing for Architect’s approval for size, gauge, and color.

C. Mockups may be included in final work.

1.8 WARRANTY

A. Warranty Submittals: Provide submittals per Division 01 – General Requirements.

B. Contractor's Guarantee:

1. Provide Owner with written Guarantee on Contractor's letterhead and signed by General Contractor and flashing system subcontractor.

2. Provide guarantee against the following defects for a time period of three years, commencing from the date of final acceptance of the project.

3. Flashing blow-off or permanent deformation from wind.

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4. Water intrusion through flashing joints into the building interior.

5. Make inspections and emergency repairs to defects or leaks in the roof system within twenty-four (24) hours of receipt of notice from the Owner.

6. Restore the affected areas to the standard of the original specifications as soon as weather permits.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

A. Galvanized Steel:

1. Classification: Per ASTM A653/A653M and A924/A924M.

B. Finish: Hot Dip galvanized, G90 coating. See Section 09 91 00, “Painting” for preparation, primers and finishes related to galvanized sheet metal.

C. Gauge As specified and shown on drawings. If not shown on drawings, provide minimum 22 gauge.

D. Manufacture and install copings, roof edge flashings, etc. tested according to ANSI/SPRI ES-1 and capable of resisting the established design pressure.

2.2 ACCESSORIES

A. Fasteners: Galvanized steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.

B. Sealant: Type specified in Section 07 92 00, “Joint Sealers”.

D. Solder: ASTM B 32; type with less than 0.2% lead.

E. Flux: FS O-F-506.

I. Counter-Flashing: Galvanized Steel, with wind-locks at 32 inches on center and at each corner.

J. Corners: Provide factory prefabricated corner assemblies.

K. Through Wall Flashing: Provide factory prefabricated Manufactured through-wall flashing

L. Components:

1. Provide sheet metal work as shown on Drawings and not specified under other Sections. Fabricate as indicated. Where specific details are not shown, fabricate according to applicable SMACNA "Architectural Sheet Metal Manual" criteria.

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2. Form sections true to shape, accurate in size, square, and free from distortion or defects. Match profiles at connections. Provide ribs, cleats, and reinforcement necessary to make sections rigid and substantial. Allow for expansion and contraction.

3. Unless noted otherwise, fabricate cleats and starter strips of same material as sheet, minimum 2 inches wide, interlocked with fabrication.

4. Form pieces in longest practical lengths. Locate joints of fasciae, roof edges, and other sheet metal work exposed to view with respect to panel joints or other architectural features as indicated on Drawings, or as directed by Architect.

5. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip and cleat interlock.

6. Generally, provide shop joints single locked and soldered, or lapped, riveted and soldered. Provide field joints designed to permit expansion, with joint covers or lapped joints with "S" clips. Do not solder.

7. Provide all concealed stiffeners and bracing at roof edge trim, fascia and gutter cover as required by Architect.

8. Form material with flat lock seams unless noted otherwise. Overlap seams in direction of flow with finished width of lock seams and soldered lap seams not less than 1 inches, and finished width of unsoldered lap seams not less than 3 inches.

9. Where specified, solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Provide smooth even surface on exposed soldering on finished surfaces.

10. Provide shop formed transition and corner pieces with locked and soldered corners. Locate field joints not less than one foot nor more than three feet from actual corner. Shortest length dimension of any corner piece leg shall not be less than one foot.

11. Locate parapet coping expansion joints 20 feet on center maximum, and as otherwise required to permit expansion and contraction.

12. Fabricate flashing assemblies as specified in this Section and as shown on Drawings.

2.2. FINISH

A. Paint flashing applications as specified below in off-site shop location.

2.3. OTHER \MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

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PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection:

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

4. Verify roof membrane, elastomeric flashing, waterproof underlayment and base flashings are in place, sealed, and secure.

5. In the event of discrepancy, immediately notify the Architect.

6. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

B. Preparation:

1. Field measure site conditions prior to fabricating work.

2. Install starter and edge strips, and cleats before starting installation.

C. Flashing Installation:

1. Support all flashings with firm and stable attachments, anchored into solid backing as required.

2. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3. Where required by installation, solder metal joints watertight for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

4. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.

5. Insert flashings into reglets to form tight fit. Secure in place in accordance with the manufacturer's instructions.

D. Coping Installation:

1. Install coping with cleats and clips as specified and as shown on drawings. Provide continuous cleat at exterior surface. Provide approved fasteners at inside (roof) surface at 24 inches on center.

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2. Install coping intermediate joints as specified.

3. Provide waterproof underlayment over wall framing and under coping flashing. Provide elastomeric flashing at all coping joints, extending 12 inches each side of joint. Coordinate with plaster underlayment installation.

5. Attach coping with welded connections, mechanical fasteners, clips, and brackets. Do not solder.

E. Roof Membrane Flashing:

1. Provide and install in coordination with roofing work, all flashing, counter-flashing, sleeves, and related components as required to provide a watertight installation.

2. Set sheet metal installed on or adjoining roofing in continuous bed of approved roofing cement.

3. Aluminum Components Installation:

a. Provide di-electric separation at all components, including fasteners.

4. Provide expansion sleeves at end of radiused components. Do not splice at mid-point of radius.

F. Fabrication Schedule:

1. Coping:

a. Material and Gage: Galvanized Steel.

b. Flashing with an exposed vertical face of 8" or less: 24 gauge.

c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.

d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.

e. Finish: As specified in this Section.

f. SMACNA Reference: Table 3-1, with J9 drive cleat, flat lock seam joint design, C1 corner, and E1 edge.

2. Prefabricated and Fabricated Reglet Counterflashing:

a. Material and Gauge: Galvanized steel, 22 gauge, painted.

b. Finish: As specified in this Section, painted.

3. Miscellaneous flashing, roof flashing, metal flashing assemblies and counterflashing:

a. Material and Gauge: Galvanized Steel:

b. Flashing with an exposed vertical face of 8" or less: 24 gauge.

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c. Flashing with an exposed vertical face of 8" to 10": 22 gauge.

d. Flashing with an exposed vertical face of 10" to 15": 20 gauge.

e. Finish: As specified in this Section, painted

5. Steel Pipe Downspout:

a. Material and Gauge: ASTM A 53, Grade B, Schedule 40, galvanized, unless otherwise shown or specified.

b. Finish: Painted per Section 09 91 00, " Painting".

END OF SECTION

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SECTION 07 92 00

JOINT SEALERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preparing sealant substrate surfaces.

B. Sealant and backing.

1.2 REFERENCES

A. ASTM C834 – Latex Sealing Compounds.

B. ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.

C. FS TT-S-227 – Sealing Compound: Elastomeric Type, Multi-Component.

D. FS TT-S-230 – Sealing Compound: Elastomeric Type, Single Component.

E. FS TT-S-1543a – Sealing Compound: Silicone Type.

F. FS TT-S-001657 – Sealing Compound: Single Component, Butyl Rubber Based.

1.3 SUBMITTALS FOR REVIEW

A. Submit product data under provisions under Division 1.

B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color availability and shore hardness.

C. Color of visible sealant to match adjacent painted surface unless specifically noted otherwise

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years experience.

B. Applicator: Company Specializing in applying the work of this Section with minimum three years experience.

C. Conform to Sealant and Waterproofers Institute requirements for materials.

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1.5 FIELD SAMPLES

A. Provide samples under provisions under Division 1.

B. Construct one field sample illustrating sealant type, color, and tooled surface, maximum 12 inches long, in each differing sealant application.

C. Do not proceed with remainder of sealant application until approved by the Architect.

D. Approved sample may remain as part of the Work. Disapproved sample shall be removed.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation. Deliver materials in unopened containers, store in dry, covered area.

PART 2 - PRODUCTS

2.1 SEALANTS

A. Use sealants selected from the following types, as indicated on drawings or as appropriate to the joint being sealed. Refer to schedule for additional approved applications.

1. Type 1: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type II, non-sag, Class A DYNATROL I, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-1a, manufactured by Silka Corp., Lyndhurst, NJ, or equal.

    a. Elongation Capability: 25 Percent.

    b. Shore A Hardness Range: 20 To 40.

2. Type 2: Multi-part Polyurethane Base. FS TT-S-227E, Class A, Type II, non-sag, DYNATROL II, manufactured by Pecora Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ, or equal.

    a. Elongation Capability: 50 Percent.

    b. Shore A Hardness Range: 20 To 35.

3. Type 3: One-part moisture curing Polyurethane sealant. FS TT-S-230C, Type 1, self leveling, Class A, UREXPAN NR-201, manufactured by Pecora Corp., Harleysville, PA, VULKEM 45, manufactured by MAMECO International

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Inc., Cleveland, OH, or equal.

a. Elongation Capability: 25 Percent.

b. Shore A Hardness Range: 35.

4. Type 4: Multi-part Polyurethane Base. FS TT-S-227, Type I, self-leveling, Class A, DYNATRED or UREXPAN NR-200, manufactured by Sika Corp., Harleysville, PA, SIKAFLEX-2c N/A, manufactured by Sika Corp., Lyndhurst, NJ or equal.

   a. Elongation Capability: 250 – 300 Percent.

   b. Shore A Hardness Range: 40.

5. Type 5: One-part Silicone Sealant. FS TT-S-1543a Type S, non-sag, Class A, 863 ACETOXY Silicone Sealant, manufactured by Pecora Corp., Harleysville, PA, SCS 1200, manufactured by General Electric Co., Waterford, NY, or equal.

   a. Elongation Capability: 25 Percent.

   b. Shore A Hardness Range: 27.

6. Type 6: One-part, non-sag, acrylic latex sealing compound, ASTM C834, AC-20 manufactured by Pecora Corp., Harleysville, PA, ACRYLIC LATEX No. 834 manufactured by Tremco, Beachwood, OH, or equal.

7. Type 7: One-part, non-sag, butyl rubber base acoustical sealant ASTM C834, BA-98, manufactured by Pecora Corp., Harleysville, PA, SHEETROCK ACOUSTICAL SEALANT manufactured by USG, Chicago, IL, or equal.

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 25 percent larger than joint width; DENVERFOAM or GREENROD, manufactured by Pecora Corp., Harleysville, PA. SONOFOAM BACKER ROD, manufactured by Sonneborn building Products, Minneapolis, MN, or equal.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application. Apply to bottom of joints which are too shallow to receive foam backer rod.

2.3 FIRESTOP SEALANTS – Not Used

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.

B. Beginning of installation means installer accepts existing surfaces.

3.2 PREPARATION

A. Clean and prime joints in accordance with manufacturer's instructions.

B. Remove loose materials and foreign matter which might impair adhesion of sealant. Remove dust with compressed air.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with manufacturer's recommendations.

E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions, using hand pointing tools, hand- operated pressure guns or air operated guns with reciprocal pumps and hoses.

B. Measure joint dimensions and size materials to achieve required width/depth ratios.

C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width. Where sealant is applied to concrete, concrete is to be fully cured.

D. Install bond breaker where joint backing is not used. Install removable masking material to maintain clean lines and protect adjoining surfaces.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges. Do not install sealant on wet or damp surfaces.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Tool joints concave, channel shaped or as detailed. Use slicking agent type recommended by manufacturer.

3.4 CLEANING AND REPAIRING

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A. Clean adjacent soiled surfaces immediately before sealant cures.

B. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished installation from the work of other sections.

B. Protect sealants until cured.

3.6 SCHEDULE

A. Exterior Joints; Unless Specified Otherwise in Individual Sections:

1. Joints between metal frames and concrete or masonry: Sealant Type (1).

2. Joints Between Impervious Materials: Sealant Type (1).

4. Joints in sheet metal flashings: Sealant Type (1).

B. Interior Joints; Unless Specified Otherwise in Individual Sections: **Not Used**

1. Vertical expansion and control joints: Sealant Type (1).

2. Joints between impervious materials: Sealant Type (1).

3. Horizontal expansion, control, isolation and abutment joints: Sealant Type (3) or (4).

4. Window and door perimeters: Sealant Type (1).

5. Gypsum Board Joints: Sealant Type (1).

6. For sink, tub or bath areas including countertop joints: Sealant Type (5).

7. Other interior joints as indicated or shown: Sealant Type (1).

8. Intersection of wall surface and cap strip at resilient flooring integral cove: Sealant Type (1).

9. Intersection of metal or wood thresholds and floor substrate, where building components are mechanically attached and required sealing: Sealant Type (6).

10. Perimeter of sound-rated walls, at intersection of gypsum board and abutting surfaces, both sides of wall: Sealant Type (7).

END OF SECTION

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SECTION 09 21 16

GYPSUM BOARD

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Standard gypsum board – patch back in kind

D. Gypsum board finish and joint treatment

1.2 RELATED SECTIONS

C. Section 06 10 00 - Rough Carpentry

G. Work may be required to be coordinated with other sections

1.3 STANDARDS AND REFERENCES (Current Edition for All Standards Listed)

A. ASTM C514-04- Standard Specification for Nails for the Application of Gypsum Board

A. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Board

E. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base

F. ASTM C1396/C1396M - Standard Specification for Gypsum Board

G. ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

H. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials

I. Gypsum Association GA-214 – “Recommended Levels of Finish for Gypsum Board”

J. Gypsum Association GA-216 - Application and Finishing of Gypsum Board Products.

K. Conform to CBC Chapter 25 / CBC Chapter 25A, Part 2, Title 24, CCR for finish materials installation.

1.4 SUBMITTALS

A. Provide submittals under provisions per Section 01 33 00, “Submittal Procedures”.

B. Submit product data indicating materials, joint toppings, joint tape, and finish materials, and accessories.

D. Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

A. Manufacturer: Provide company who has produced the specified products for a period of 5 years prior to beginning work of this Section and maintains the capability to provide the specified products in compliance with the delivery and quantity criteria for the Project.

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B. Installer: For installation of work, use only personnel who are thoroughly trained and experienced in the skills required, have installed similar applications of the specified products within one year prior to beginning work of this Section, and who are completely familiar with the manufacturers' recommended methods of installation as well as the requirements of this work.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Building Temperature and Ventilation: Do not install wallboard and joint compounds if building temperature is below 55 degrees F and proper ventilation is not provided to eliminate excessive moisture from building.

1.7 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver: All materials shall be delivered in original packages or bundles with the manufacturer's labels intact and legible.

B. Handling and Storage: Materials shall be kept dry, stacked off the ground and properly supported and protected from weather. Protect all edges and surfaces. Stack wallboard flat.

C. Protect work in progress as well as work of other trades. Clean surfaces that have been spotted during wallboard application.

D. Contractor shall remove and reinstall all existing conduit, wiremold, light fixtures, fire alarm devices, etc. as required to perform work as listed in this specification. Suspend all wiring as required during work where equipment cannot be disconnected.

1.9 MOCKUPS/TEST INSTALLATIONS – NOT USED

A. Provide minimum 8’-0” x 8’-0” in place wall texture mock-up for Architect approval of texture.

B. Mock up portion can remain for inclusion in final work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Characteristics of specific products, where named in this Section, are indicated to establish required level of quality, appearance, and performance.

1. United States Gypsum Co., USG. Phone - (800) 874-4968

2. Georgia Pacific Building Products – Phone - (800) 225-6119

B. Alternate: National Gypsum Company – Phone (704) 365-7300

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C. Substitutions per Section 01 25 00, “Substitution Procedures”.

2.2 GYPSUM BOARD

A. Board Type:

1. Non-Rated Gypsum Board:

a. Equal to USG, Sheetrock® Brand, “Regular” Gypsum Board, per ASTM C1396.

1) Thickness: 5/8 inch.

2) Facing: Paper.

3) Edge: Tapered.

4) Website Link: https://www.usg.com/content/usgcom/en/products/walls/dry-wall/drywall-panels/regular-panels/sheetrock-gypsum-panels.141010.html

2. Rated Gypsum Board:

a. Equal to USG, Sheetrock® Brand, “Type X, Fire-Rated” Gypsum Board, per ASTM C1396.

1) Thickness: 5/8 inch.

2) Facing: Paper.

3) Edge: Tapered.

4) Website Link: https://www.usg.com/content/usgcom/en/products/walls/dry-wall/drywall-panels/fire-resistant-panels/sheetrock-firecode-x-gypsum-panels.142220.html

2.3 ACCESSORIES

A. Acoustical Sealant: USG, Tremco, or equal, Non-hardening, non-skinning, conforming to ASTM C557 and C919, for use in conjunction with non-rated gypsum board assemblies.

B. Drywall Joint and Edge Accessories:

1. Corner Bead: USG or approved alternate, paper faced metal.

2. Edge Trim: USG GA 216; Type "J" bead. or approved alternate, paper faced metal.

3. Expansion Joint: USG 093 or approved alternate, metal.

4. Drywall Reveal: Fry, DRM Series, reveal dimension as shown on drawings.

C. Joint and Finishing Systems:

1. Provide systems produced by same manufacturer as boards.

2. Joint Materials: GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.

3. Joint Systems: USG Ready Mixed Compounds, complying with ASTM C475, vinyl based, certified asbestos free.

4. Finishing System Materials: USG Multi-Purpose or approved alternate, complying with ASTM C475, non-aggregate, vinyl based, certified asbestos free.

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5. Primer: Manufacturer's approved primer, compatible with finishes specified in other Sections.

D. Fasteners:

1. Gypsum Board Screws: Self-drilling, self-tapping steel screws.

c. Per GA 216 provide:

3) Type W at wood framing,

d. Not less than 1-1/4" long at 5/8" sheathing thickness per Table 1, GA 253.

E. Adhesive: Manufacturer's approved adhesive for attachment to concrete surfaces.

F. Joint Compound: Durabond as manufactured by USG, or equal. For use at all locations where gypsum board is in direct contact with concrete curbs.

Product Link: https://www.usg.com/content/usgcom/en/products/walls/drywall/joint-compound/setting-type-powder-joint-compounds/sheetrock-durabond-joint-compound.html

G. Electrical Box Sealer: Lowry's "Electrical Box Pads", 6" x 8" x 1-1/8" resilient sealer pads. Covers per Electrical specification and drawings.

H. Underlayment Membrane: Membrane complying with ANSI A 108.2-3.8.

2.4 FIRE-RATED SHAFTWALL ASSEMBLIES – **Not Used**

2.5 METAL SUSPENSION SYSTEM FOR DRYWALL CEILING ASSEMBLIES -**Not Used**

2.6 WEATHER BARRIER – **Not Used**

2.7 OTHER MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

B. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

C. Verify framing members are properly installed and will comply with specified tolerances.

D. Verify that openings, curbs, pipes, sleeves, ducts, and vents are solidly set, and blocking and backing is in place.

E. Do not proceed with installation of wallboard until deficiencies are corrected and surfaces to receive wallboard are acceptable.

F. In the event of discrepancy, immediately notify the Architect.

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G. The Painting Contractor shall not be required to accept the gypsum wallboard installation until after he has applied sealer. At that time he shall inspect the installation and report to the General Contractor, with a letter to the Architect, of any surface damage, defects or uneven walls. Uneven walls shall mean those that are not straight, plumb or of an even, true plane. All such discrepancies shall be the responsibility of gypsum wallboard installer, and shall be connected by him prior to application of further wall decoration.

H. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

I. Beginning of installation means acceptance of existing surfaces substrate.

J. At all existing gypsum board surfaces to be refinished as shown on the drawings, Contractor shall rough sand all surfaces prior to skim coat for acceptable adhesion.

3.2 PREPARATION

A. Insulation Coordination:

1. Verify insulation is fitted tightly within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and to items passing through partitions.

2. Install insulation specified in this Section as a component in rated floor/ceiling and roof/ceiling systems.

3.3 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with manufacturer's instructions and designated system number for fire rated assemblies.

1. Unless noted otherwise, utilize water resistant type for wall surfaces within four feet of the outermost edge of any plumbing fixture or moisture generating equipment. Extend water resistant gypsum board full height.

2. Do not use water resistant gypsum board on ceiling applications.

3. Do not use water resistant gypsum board at any shower/locker room applications, wall or ceiling.

B. Prior to installation of any gypsum board product, Contractor shall review locations of all toilet room accessories with owner to place all backing required.

C. Install gypsum board in accordance with GA 216, and ASTM C840.

D. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.

F. Use screws when fastening gypsum board to wood furring or framing.

G. Fasteners for all vertical gypsum boards shall be placed at 8” at the perimeter and 12” in field U.O.N. on drawings.

H. Treat cut edges and holes in moisture resistant gypsum board with sealant.

I. Place control joints consistent with lines of building spaces as indicated by Architect.

J. Place corner beads at external corners. Use longest practical length. Place edge trim where

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gypsum board abuts dissimilar materials.

K. Contractor shall provide new mud ring extensions for all electrical switch and outlets to allow device to flush with face of new gypsum board surface.

L. At all locations where gypsum board extends past bottom sill plate and contacts face of curb, apply Durabond product to back side of gypsum board per manufacturer's recommendations to secure to face of concrete curb. Provide moderate pressure and temporary nailing or shoring to ensure adequate bond.

M. Where gypsum board extends across concrete curbs, install with specified adhesive, consisting of vertical beads placed at 4 inches on center full height. Bond to curb with rollers exerting sufficient pressure to assure full contact and surface alignment with board at framing above.

N. Use screws of proper length when fastening gypsum board to framing, spaced at 8 inches on center maximum at each support.

O. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

Q. Edge and Trim Installation:

1. Install corner beads at all external corners. Use longest practical length.
2. Install corner beads at all conditions where gypsum board abuts dissimilar materials.
3. Install angle reinforcement at interior corners.
4. Tape and finish joint reinforcement as specified.

R. Install acoustical sealant at wall edge perimeter, including floor edge, and at all penetrations where fire stopping is not required.

3.5 GYPSUM BOARD FINISH AND JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Comply with descriptions and Finish Levels as specified and in accordance with referenced standard.

D. LEVEL 1 Finish: Gypsum board located above ceiling areas, plenums, and similar surfaces not visible in completed construction:

1. Embed tape at all joints and interior angles in joint compound.
2. Apply one separate coat of joint compound over all joints, angles, fastener heads, and accessories.
3. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

E. LEVEL 1 Finish: Gypsum board designated to receive rigid FRP or solid paneling.

1. Embed tape at all joints and interior angles in joint compound.

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2. Apply two separate coats of joint compound over all joints, angles, fastener heads, and accessories.
3. All joint compound shall be smooth and free of tool marks and ridges.
4. Apply uniform coat of approved primer over entire surface with roller.

F. LEVEL 3 Finish - Knock-Down Finish: Gypsum board designated to receive flat paint finish.
1. Embed tape at all joints and interior angles in joint compound.
2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
3. Apply texture coating over entire surface. Finish in "Knock-Down" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.
4. Apply uniform coat of approved primer over entire surface with roller.

G. LEVEL 4 Finish - Orange Peel: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.
1. Embed tape at all joints and interior angles in joint compound.
2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
3. Apply texture coating over entire surface. Finish in "Orange Peel" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.
4. Apply uniform coat of approved primer over entire surface with roller.

H. LEVEL 5 Finish - Smooth: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.
1. Embed tape at all joints and interior angles in joint compound.
2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.
3. Apply thin skim coat of joint compound over entire surface. Sand as necessary. Surface shall be smooth and free of tool marks and ridges.
4. Apply uniform coat of approved primer over entire surface with roller.

3.6 TOLERANCES

A. Comply with the following tolerances for level, plumb and flat. Where substrate framing will not comply with specified tolerances, correct deficiencies as required.
1. Level and Plumb: Plus or minus 1/4 inch in 10 feet, non-cumulative.
2. Flatness: No gaps exceeding 1/8 inch at any point under a 10 foot straight edge placed on surface in any orientation.

3.7 ACOUSTICAL ACCESSORIES INSTALLATION

A. Install acoustical sealant within partitions in accordance with manufacturer's instructions.

B. Install resilient sealer pads over backs and sides of electrical junction boxes.

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3.8 ADJUST AND CLEAN

A. Cleaning and Repair: Clean surfaces that have been spotted or soiled during wallboard application. Contractor shall clean all light fixture lenses, fire alarm devices, electrical outlets, as performing work.

B. Defective Work: Remove and replace defective work which cannot be satisfactorily repaired, at the direction of the Architect, with no additional cost to the Owner.

C. Protection: Protect installed work against damage from other construction work.

3.9 CLEAN-UP

A. Upon completion of the work under this Section, remove all surplus material, rubbish and debris from the premises and leave floors "broom clean".

END OF SECTION

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SECTION 09 51 53
DIRECT-APPLIED ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Acoustic Tile units to match existing direct-applied ceiling tiles.

B. Perimeter trim.

1.02 RELATED REQUIREMENTS

A. Section 09 21 16 – Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

B. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

E. California Code of Regulations, Title 24, Part 2, California Building Code (CBC), International Building Code.

F. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, “CAL-Green”.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Install acoustic units after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittals, for submittal procedures.

B. Product Data: Provide data on acoustic units and accessories.

C. CAL-GREEN Submittals: Product Data – VOC Limits: For adhesives sealants, fillers, primers and coatings, documentation including printed statement of VOC contents, comply with limits specified in related section.

D. Samples: Submit two samples, of manufacturer's standard size, illustrating material and finish of acoustic units, match existing.

E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

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F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum five (5) years of documented experience.

1.07 PROJECT CONDITIONS

A. Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Install acoustic units after interior wet work is dry.

C. Maintain uniform temperature and humidity not exceeding the manufacturer's outside limits prior to, during, and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Direct Applied Acoustical Ceilings:
   1. Armstrong World Industries, Inc: www.armstrong.com/#sle.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. VOC Limits for adhesives, sealants, fillers, primers and coatings . Comply with limits specified in related section.

B. Acoustic Tile, Direct Applied: Mineral Fiber, wet-formed, factory-applied latex paint, ASTM E1264, Type III, Form 2, Pattern C E.
   1. Size: 12 by 12 inches.
   2. Thickness: 1/2 inch minimum.
   3. CAC: NA
   4. Light Reflectance: 0.82.
   5. Noise Reduction Coefficient (NRC): 0.55 when tested in accordance with ASTM C423 for Type direct-applied mounting, per ASTM E795.
   6. Fire Hazard Classification: ASTM E84 Class A (Flame Spread 25 or under), UL Labeled.
   7. Surface Burning Characteristics: Flame spread index of 0-25, smoke developed index of 0-450, when tested in accordance with ASTM E84.
   8. Humidity/Sag Resistance: HumiGuard® Plus.
   9. Anti-Mold/Mildew: BioBlock® performance resist the growth of mold and mildew on the tile surface. Disinfectable CleanAssure™.
   10. VOC Emissions: GreenGuard Gold Certified with California Dept. of Public Health CDPH/EHLB Standard Method.
   11. Recycled Content: Exceed 50% total recycled content.
   12. Edge: Beveled, tongue and groove.

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13. Surface Color: Match existing.As selected by Architect
14. Surface Pattern/Finish: Non-directional fissured.
15. Product:
    a. Armstrong; Fine Fissured® 741 – match existing.
    b. Substitutions: Section 01 60 00.

C. Adhesive: Waterproof, gun grade; type recommended by tile manufacturer.

2.03 FINISHES – Not Used

A. Acoustic Tile and Perimeter Trim Color(s) as selected by Architect from:
1. Manufacturer's full range of standard colors - match existing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION

A. Install system in accordance with manufacturer's instructions.

B. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Install acoustic units level in uniform plane.

3.03 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

END OF SECTION

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SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Surface finish schedule includes painting of all exposed surfaces, except as otherwise specified or indicated.

D. Painting of all new and existing piping, ductwork, conduit and supports to match interior/exterior paint finishes.

1.2 RELATED SECTIONS

B. Section 00 72 00 - General Conditions.

H. Section 06 20 13 - Exterior Finish Carpentry

L. Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 REFERENCES (Current Edition for All Standards Listed)

A. ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications. Note: Conform to this document for interpretation of terms used in this Section.

C. ASTM D3359 – Standard Test Methods for Rating Adhesion by Tape Test

D. ASTM D4060 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

E. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials

F. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials

G. ASTM G154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

H. Society for Protective Coatings (SSPC) & National Association of Corrosion Engineers (NACE):

1. SSPC Surface Preparation Specification No. 1 (SP 1) – Solvent Cleaning

2. SSPC Surface Preparation Specification No. 2 (SP 2) – Hand Tool Cleaning

3. SSPC Surface Preparation Specification No. 3 (SP 3) – Power Tool Cleaning

4. SSPC- Surface Preparation Specification No. 6 (SP 6) /NACE No. 3 - Commercial Blast Cleaning

1.4 REGULATORY REQUIREMENTS

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A. Conform to the 2019 California Building Code for flame/spread/smoke density rating requirements for finishes.

B. Furnish manufacturer's certification that all paint coatings furnished for project work comply with the EPA clean air act for permissible levels of volatile organic content for architectural coatings applied in California as designated by California Air Resources Board (CARB).

1.5 SUBMITTALS

A. Provide submittals under provisions of Section 01 33 00, "Submittal Procedures".

B. Product Data: Submit product data of all proposed products, identifying product series, material composition, performance characteristics and sheen. Product data shall include the paint manufacturers recommended mil thickness application of each coat for each type of paint specified.

C. Submit manufacturer's certificate that products comply with current safety and environmental regulations, including hazardous materials labeling and air quality/VOC regulations

D. Submit manufacturer's certificate that products are physically and chemically compatible with each other and meet listed ASTM or Federal Specifications.

E. Where applicable, provide manufacturer's written evaluation of existing paint/coating systems, including directions as to surface preparation and primers compatible with existing systems.

F. Submit manufacturer's application instructions for each painting system, including surface preparation.

G. Color Selection procedure:

1. Provide Architect with samples of complete color and sheen range available for submitted products.

2. Based on submitted samples and specified color criteria, Architect will prepare preliminary color schedule for all field applied coatings.

3. Based on preliminary color schedule, submit samples of all coatings, applied on specified substrate. Submit three samples, approximately 8 x 10 inch in size, illustrating each color and sheen scheduled.

4. After review of preliminary color schedule samples, Architect will prepare final color schedule. Where different from preliminary schedule, submit three samples, approximately 8 x 10 inch in size, illustrating revised color and sheen.

H. Submit four brush-out samples 8x10 inch in size illustrating color and sheen selected for each surface-finishing product shown in the finish schedule.

I. Field Sample: Furnish sample of actual paint colors selected on portion of building item to receive paint as directed by Architect, prior to beginning interior and exterior painting.

K. Applicator: Company specializing in commercial painting and finishing with five years documented experience.

L. Installing Foreman: Individual specializing in applying specified systems with minimum 10 years documented experience.

M. Special Inspection Procedures: See this Section.

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1.6 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 65 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 50 degrees F. for exterior work; 45 degrees F for interior work, unless required otherwise by manufacturer's instructions.

D. Prior to beginning preparation and coating application, provide lighting level of 80 foot-candles measured mid-height at substrate surface. Where natural lighting does not provide such levels, provide temporary lighting.

E. Apply all alcohol-based primers, vanishes, lacquers or other products that produce excessive fumes after school hours or on weekends.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00, “Product Requirements”, in manufacturer's original unopened, labeled containers, inspect to verify acceptance.

B. Store and protect products from abuse and contamination, under provisions of Section 01 60 00, “Product Requirements”.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in an enclosed metal storage container located outside of building, unless required otherwise by manufacturer's instructions.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.8 EXTRA STOCK

1. Provide one unopened five-gallon container of each color and sheen to Owner.

2. Label each container with color, sheen, and room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design - Paint: Specific products listed on Schedule in Part 3 of this Section, are indicated to establish required level of quality, appearance, and performance.

1. Kelly Moore (Specification Basis of Design for Paint) Alternate Manufacturers - Paint:

1. Sherwin Williams

6. Or approved equal

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E. Basis of Design, Paint Coatings - Contacts:

1. Kelly Moore (Paints

Address: 987 Commercial Street, San Carlos, CA 94070

Website - https://kellymoore.com/

a. Kelly Moore Product Representative

Eric Patricio, Phone - (650) 544-9759, E-mail - epatricio@kellymoore.com

2.2 MATERIALS

A. Coatings: Ready mixed manufacturers paint. Process pigments to a soft paste consistency capable of being readily and uniformly dispersed to a homogeneous coating, except field catalyzed coatings.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: Provide all admixtures, thinners, flow agents and other materials not specifically indicated but required to achieve the finishes specified.

2.3 FINISHES/COLOR

B. Colors shall be selected by Architect as specified.

C. Each coat shall be a perceptibly different tint.

D. Color Range (For Colors Not Selected Or Noted Elsewhere):

1. Unless noted otherwise, where exterior painting occurs, match existing school color scheme.

2. Where no color range is specified, provide single color for each item or component.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that work of this Section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Measure moisture content of surfaces using an electronic moisture meter. Provide de-humidifiers and heat as necessary to obtain required environmental conditions for interior paint applications. Do not apply finishes unless moisture content of surfaces is below the following maximums:

1. Plaster, Gypsum Wallboard: 18 percent.

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2. Interior Located Wood: 15 percent, measured in accordance with ASTM D4442.
3. Exterior Located Wood: 7 percent measured in accordance with ASTM D4442.

E. In the event of discrepancy, immediately notify the Architect.

F. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

G. Contractor to arrange for Inspector's verification of proper surface preparation prior to start of painting and between each coat.

H. Beginning of paint application to any new surface means acceptance of surfaces prepared under separate specification section.

3.2 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Remove all loose and peeling paints

C. Correct all defects on existing surfaces including patching holes in walls and ceilings, skimming surfaces, repairing cracks, puttying, sanding, etc. to restore original wall finish and provide a uniform texture. Spot prime all areas of repair.

D. Clean all surfaces thoroughly with approved cleaning product. Rinse thoroughly and allow to completely dry before coating.

E. Remove or seal marks which may bleed through surface finishes with B-I-N Primer (additional coats may be required), shellac, or other approved sealers, compatible with finishes to be applied.

K. Bare or Existing Metal Surfaces:

1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.
2. Surface Preparation For Materials With High Performance Coatings: SSPC-SP6/NACE No. 3 Commercial Blast Clean to create a dense, uniform and angular anchor profile of 2.0 mils minimum
3. Completely prime entire surfaces.
4. Use an approved primer that will be compatible and warranted by the selected paint manufacturer over any surface that has been previously painted with an oil-base finish.

L. Galvanized Metal Surfaces:

1. Unless otherwise specified, clean surfaces, per SSPC, SP 1, with a solvent approved by paint system manufacturer. Solvent shall be compatible with new paint system materials, OR sand and feather existing finishes in place using methods referenced within SSPC, SP 2 or SP 3 surface preparation standards. Use of acidic or other corrosive paint removal techniques generating caustic or noxious fumes is not permitted.

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3. Test all galvanized steel surfaces for evidence of chromate conversion treatments or other post-galvanizing applications that are not compatible with paint finishes.
4. Where testing demonstrates presence of such treatment, brush blast or otherwise mechanically abrade the surface as required by coating manufacturer.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. All IDF's are to be properly protected in a manner that allows ventilation adequate to prevent damage to equipment. At completion of painting work, all IDF's must be professionally cleaned by an approved technician with a minimum of 3-years of experience in computer cleaning.

E. Remove all debris, including empty paint containers, from site and properly dispose of in lawful manner.

F. Do not use storm drain system for clean-up.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions. Provide coats in appropriate mill thickness to provide suitable cover. Additional coats may be required to provide an acceptable finish depending on base tint and existing color bleed through.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish. Number of coats in schedule are the minimum required, additional coats shall be applied as required to achieve a finish that is uniform in color and sheen

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint as recommended by manufacturer.

P. Exterior surfaces, except as noted in other sections, including plasterconcrete, metal fabrications, structural components and metal flashings: Unless noted otherwise, apply paints and coatings as specified below:

1. Unless noted otherwise, do not paint exterior galvanized metals, including railings, steel structural components, all roof flashings and accessories, all plaster trim and accessories, and all mechanical and electrical system components.
2. Apply exterior paint to all roof penetrations visible to the eye from typically occupied locations in the finished project. "Typically occupied" includes those portions of the project visible to a standing person from elevated portions of the site.

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3. Apply exterior paint to steel structural components, canopy decking, canopy framing, and miscellaneous fabrications visible to the eye from typically occupied locations in the finished project.
4. Unless designated as prefinished on drawings, apply exterior paint to metal roof copings, gutters, downspouts and flashings visible to the eye from typically occupied locations in the finished project.
5. Apply exterior paint to all plaster trim, reveals and accessories.
6. Do not paint exterior galvanized metal handrails and railings.

Q. Apply paint to all other exterior components as specified or shown on drawings.

R. Paint suspended pipe batten systems with interior finish, applied by spray method. Paint all surfaces of grid members.

S. Paint all surfaces and building system components above ceiling grid line in single color, contrasting with grid, in system complying with schedule for specific surface or component.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment.

B. Do not paint factory finished mechanical and electrical equipment, except those exposed to view in non-utility areas. Paint factory prefinished items exposed to view in non-utility areas with color as directed by Architect.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. At interior and exterior applications, prime and paint exposed and insulated pipes, conduit, boxes, exposed and insulated ducts, mechanical equipment units, hangers, brackets, collars and supports, except where items are prefinished.

E. Replace identification markings on mechanical or electrical equipment when painted accidentally.

F. At all locations where new exposed duct work is to be painted, Contractor shall paint duct work at floor level prior to installing on wall. Once painted, protect duct work from overspray and other construction related debris. Ductwork finish shall be smooth and without blemishes. Once installed, carefully touchup any areas scratched during install.

G. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels, except fire dampers.

H. Paint exposed panels, pedestals, boxes, conduit and related electrical equipment occurring in exterior and interior finished areas.

I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

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B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. At end of workday remove from building flammable paint, solvents, and reducing agents.

D. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

E. Upon completion of the work of this section, remove all surplus material and related debris from the site.

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3.7 SCHEDULE - GENERAL REQUIREMENTS:

A. For ease of specifying, unless otherwise noted, product numbers of Kelly Moore have been used.

1. Basis of Design Manufacturers - Paint:

a. Basis of Design – Paints, - Kelly Moore

2. Acceptable Paint Manufacturers – See Paragraph 2.1, this Section, for acceptable alternates. For alternates, a submittal is required showing equivalence to specified products per Section 01 25 00, “Substitution Procedures”

100% SD
REVIEW SET

3.8 SCHEDULE - INTERIOR SURFACES – **NOT USED**

A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.

B. **New Gypsum Board Walls and Soffits** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Low Sheen/Eggshell Paint Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1007 Premium Professional Low VOC Interior Low Sheen.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1007-TDS.pdf
4. Or two coats: KM 1010 Premium Professional Low VOC Interior Eggshell.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1010-TDS.pdf

C. **New Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Flat Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1005 Premium Professional Low VOC Interior Flat.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-TDS.pdf

D. **New Gypsum Board Walls, Soffits Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar "wet" spaces – Semi-Gloss Paint Finish:

1. Prep as described in Paragraph 3.2 H in this Section.
2. One coat: KM 971 Acry-Plex Low VOC Interior PVA Primer.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/971-TDS.pdf
3. Two coats: KM 1685 Dura-Poxy 100% Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1685-TDS.pdf?sfvrsn=2

E. **Existing Gypsum Board Walls & Soffits** at classrooms, offices, storage rooms, etc. –

Low Sheen/Eggshell Paint Finish:

100% SD
REVIEW SET

1. Prep as described in Paragraphs 3.2 A-G & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two Coats: KM 1007 Premium Professional Low VOC Interior Low Sheen.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1007-TDS.pdf

F. **Existing Gypsum Board Ceilings** at classrooms, offices, storage rooms, etc. (non "wet" type spaces) - Flat Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two coats: KM 1005 Premium Professional Low VOC Interior Flat

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-TDS.pdf

G. **Existing Gypsum Board Walls and Ceilings** at toilet rooms, locker rooms, kitchens, custodian rooms, and similar "wet" spaces – Semi-Gloss Paint Finish:

1. Prep as described in Paragraphs 3.2 A-F & H in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx
3. Two coats: KM 1685 Dura-Poxy 100% Acrylic Semi-Gloss Enamel.

100% SD
REVIEW SET

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1685-TDS.pdf?sfvrsn=2

H. **Acoustical Ceiling Tiles**, Where painting is indicated – Flat:

1. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

2. Two coats: KM 1005 Premium Professional Flat Wall Paint

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1005-tds.pdf

I. **Wall Preparation For Vinyl Wall Coverings**:

1. One Coat Sealer: ZINSSER SHIELDZ Universal Wallcovering Primer

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/zinsser/wallpaper-primers/shieldz-universal-wallcovering-primer/

J. **Interior Non-Galvanized Metal** - Doors and Frames, Ferrous Metal Piping, Structural Steel, Miscellaneous Metal Fabrications, and Related Components:

1. Prep per Paragraphs 3.2 A-G, K, M, & N this Section.
2. One Coat: KM 6646 DTM Acrylic Eggshell Primer Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf?Status=Master&sfvrsn=8

3. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf?sfvrsn=2

4. Note: Interior structural steel and miscellaneous metal fabrications shall be shop-primed as described above and included in the scope of work for the following sections:
   a. Section 05 12 00 - Structural Steel
   b. Section 05 50 00 - Metal Fabrications
   c. Section 08 11 13 - Hollow Metal Doors and Frames

K. **Interior Galvanized and Zinc Alloy Metal** - Semi-Gloss Enamel:

1. Prep per Paragraph 3.2 L, this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

100% SD
REVIEW SET

Product Website Link:
https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx

3. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link:
   https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

L. **Interior Cement Plaster and Interior Exposed Concrete** - Semi-Gloss at Walls and Flat at Ceilings, Enamel:

1. Prep per Paragraphs 3.2 A-G & I, this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

   Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

   Product Website Link:
   https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1050-TDS.pdf

M. **Interior Concrete Block** - Semi-Gloss:

1. Prep per Paragraphs 3.2 A-F, this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

N. **New or Existing Interior Painted Woodwork, Wood Windows and Casework** - Semi-Gloss Enamel:

1. Prep per Paragraphs 3.2 A-F & O this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

100% SD
REVIEW SET

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

Or, if heavily stained - Zinsser B-I-N Primer-Sealer Stain-Killer,

Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Zinsser/BIN-03-B-I-N_Shellac-Base_Primer_Ultimate_Stain_Blocker_TDS_2.ashx

3. Two Coats: KM 1050 Premium Professional Low VOC Interior Semi-Gloss Enamel

Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1050-TDS.pdf

100% SD
REVIEW SET

3.9 SCHEDULE - EXTERIOR SURFACES - PAINT

A. Descriptions in schedule apply to new and previously painted surfaces. Number of coats listed are a minimum, additional coats may be required to provide suitable uniform finish.

B. **Exterior Non-Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-G, K, M and N in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx
3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf
4. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

C. **Exterior Galvanized Ferrous Metal Fabrications** - Steel Doors and Frames, Flashings and Similar Items – Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-G & L in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/~/media/DigitalEncyclopedia/Documents/RustoleumUSA/TDS/English/CBG/Krud%20Kutter/KRK-19_Metal_Clean_and_Etch_TDS.ashx
3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf
4. Two Coats: KM 6648 DTM High Performance Acrylic Semi-Gloss Enamel.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648-TDS.pdf

D. **Exterior Galvanized Metal Railings – Painted**, As Noted In Drawings - Gloss Urethane Enamel:

1. Prep as described in Paragraphs 3.2 A-G & K in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

100% SD
REVIEW SET

Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646-TDS.pdf?sfvrsn=2

4. Two Coats: KM 1828 Envy Interior/Exterior Semi-Gloss Enamel

E. **Exterior Aluminum Panels – Non-primed**:

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: KM 6646 DTM Acrylic Eggshell Metal Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6646 DTM-TDS.pdf?sfvrsn=2

4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

F. **Exterior Aluminum Panels – Pre-primed**:

1. Prep as described in Paragraphs 3.2 A-G in this Section.
2. Clean and etch with phosphoric acid solution and rinse with clear water. Rustoleum KRUD KUTTER Metal Clean and Etch

   Product Website Link: https://www.rustoleum.com/product-catalog/consumer-brands/krud-kutter/

3. One Coat: Factory Prime coat (Touch up if abraded)
4. Two Coats: KM 6648 DTM High Performance Semi-Gloss Enamel

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/6648 DTM-TDS.pdf?sfvrsn=2

G. **Exterior Cement Plaster and Exposed Exterior Concrete** - Semi-Gloss Enamel:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 247 Acry-Shield 100% Masonry Primer

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/247-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

H. **New Concrete Block** - Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F in this Section.

100% SD
REVIEW SET

2. One Coat: KM 521 Color Shield Prime & Fill Acrylic Block Filler

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/521-TDS.pdf

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

I. **Existing Concrete Block** - Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

J. **Cementitious Siding and Soffits** - Flat:

1. Prep as described in Paragraphs 3.2 A-F in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1142 Inspire Exterior 100% Acrylic Flat.

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1142-TDS.pdf

K. **Exterior Wood, Wood Windows, Etc. – Painted** -Semi-Gloss:

1. Prep as described in Paragraphs 3.2 A-F & O in this Section.
2. One Coat: KM 295 Kel-Bond Universal Primer,

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/295-TDS.pdf?Status=Master&sfvrsn=0

3. Two Coats: KM 1148 Inspire Exterior Acrylic Semi-Gloss Finish

   Product Website Link: https://kellymoore.com/wp-content/uploads/products/data-sheets/1148-tds.pdf.pdf

100% SD
REVIEW SET

END OF SECTION

ALUM ROCK UNION SCHOOL DISTRICT

HVAC AND ROOFING UPGRADES

100% SD REVIEW SET

JK ARCHITECTURE ENGINEERING

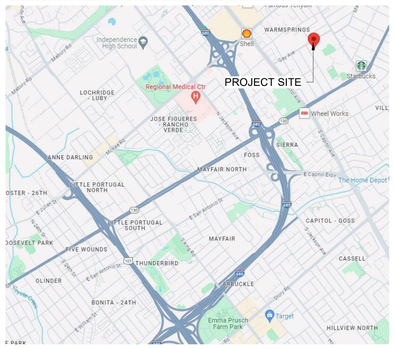
AUBURN | TAHOE CITY | RENO | SAN JOSE

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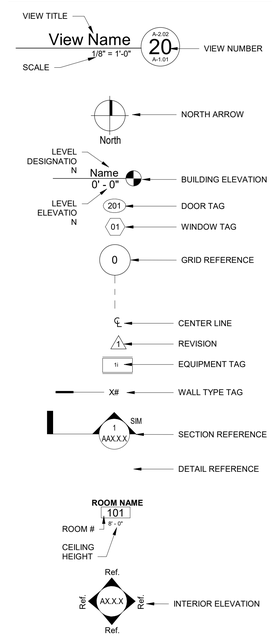
ABBREVIATIONS

ABV	ABOVE
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX.	APPROXIMATE
ARCH	ARCHITECT
B.O.	BOTTOM OF
BALC	BALCONY
BD	BOARD
BET	BETWEEN
BLDG	BUILDING
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BRKT	BRACKET
BULKHD	BULKHEAD
BUR	BUILT UP ROOF
C.G.	CORNER GUARD
CAB	CABINET
CALK	CAULKING
CEM	CEMENT
CER	CERAMIC
CJ	CONTROL JOINT
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CO	CASED OPENING
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DR	DOOR
DS	DOWN SPOUT
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
ELEC	ELECTRIC
ELEV	ELEVATION
EMER	EMERGENCY
ENCL	ENCLOSURE
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EW	EACH WAY
EXP. JT.	EXPANSION JOINT
EXST	EXISTING
F.F.	FINISHED FACE
F.O.	FACE OF
FA	FIRE ALARM
FAP	FIRE ANNUNCIATOR PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER PANEL
FG	FINISH GROUP
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FLR	FLOOR
FLUOR	FLOURESCENT
FMF	FLEXIBLE MEMBRANE FLASHING
FT	FOOT OR FEET
FUR	FURRING
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GL	GLASS
GND	GROUND
GWB	GYPSUM BOARD
GYP	GYPSUM
H.W.H.	HOT WATER HEATER
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
ID	INNER DIAMETER
INCAN	INCANDESCENT
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
LB(S)	POUNDS
LDG	LANDING
LT	LIGHT
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O.P.	OVERFLOW PIPE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
PART	PARTITION
PERM	PERIMETER
PG	PAINT GRADE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PR	PAIR
PT	PAINT
PTD	PAINTED
R	RISER
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE	REFER
REF	REFRIGERATOR
REINF	REINFORCED
REQD	REQUIRED
RESIL	RESILIENT
RF DK	ROOF DECK
RM	ROOM
RO	ROUGH OPENING
RTU	ROOF TOP UNIT (MECH)
S	SOUTH
S.S.D.	SEE STRUCTURAL DRAWINGS
S.T.S.	SELF TAPPING SCREW
SAFB	SOUND ATTENUATION FIBER BATT
SC	SCUPPER
SCHED	SCHEDULE
SEAL	SEALANT
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUPSPENDED
SYM	SYMMMETRICAL
T	TREAD
T&G	TONGUE & GROOVE
TEL	TELEPHONE
TER	TERRAZZO
THK	THICK
THR	THRESHOLD
TO	TOP OF
TYP	TYPICAL
UC	UNDERCUT
UNFIN	UNFINISHED
UNO	ULNESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VTR	VENT TERMINATION PIPE
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATERCLOSET
WIN	WINDOW
WP	WATERPROOF
WS	WETSTACK
WSCT	WAINSCOT
WT	WEIGHT

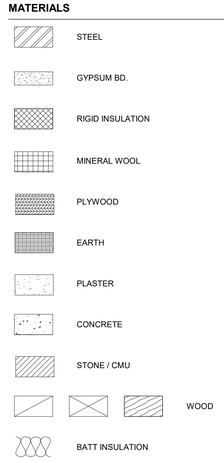
VICINITY MAP



STRUCTURAL NOTES



MATERIALS



PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS	2022 EDITION
NFPA 14	INSTALLATION OF STANDPIPE AND HOSE SYSTEMS	2019 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION
NFPA 17a	WET CHEMICAL EXTINGUISHER SYSTEMS	2021 EDITION
NFPA 20	INSTL. OF STATIONARY PUMPS FOR FIRE PROTECT.	2019 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE (CA AMENDED)	
	UL STD 1971 FOR VISUAL DEVICES	2022 EDITION
NFPA 80	FIRE DOOR AND OTHER OPENING PROTECTIVES	2019 EDITION
NFPA 92	STANDARD FOR SMOKE CONTROL SYSTEM	2018 EDITION
UL 464	AUDIBLE SIGNAL APPLIANCES	2003 EDITION
UL 521	HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS	1999 EDITION
	ADA STANDARDS FOR ACCESSIBLE DESIGN	2010

REFERENCE CODE SECTION FOR NFPA STANDARDS - 2022 CBC (SFM) CHAPTER 35
SEE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS

INDEX - SHEET LIST

SHEET NUMBER	SHEET NAME	100% SD
01 - General		
G0.0	COVER SHEET	●
30 - Demolition		
D2	OVERALL DEMOLITION ROOF PLAN	●
31 - Architectural		
A2	OVERALL ROOF PLAN	●
A5.1	ROOF DETAILS | CUSTOM	●
A7.1	ENLARGED REFLECTED CEILING PLAN	●
40 - Structural		
S0.0.2	STRUCTURAL SPECIAL INSPECTION AND TESTING	●
S1.0.0	GENERAL NOTES	●
S1.0.1	FOUNDATION PLAN	●
S2.0.1	ROOF FRAMING PLAN	●
S5.0.1	DETAILS	●
50 - Mechancial		
M0.0.1	MECHANICAL NOTES, LEGEND, AND SCHEDULES	●
M0.0.2	MECHANICAL DETAILS	●
M1.0.1	MECHANICAL FLOOR PLAN	●
M2.0.1	MECHANICAL ROOF PLAN	●
M1.0.0	MECHANICAL SITE PLAN	●
M6.4.1D	MECHANICAL DEMO ENLARGED FLOOR PLAN	●
M6.4.1	MECHANICAL ENLARGED FLOOR PLAN	●
60 - Plumbing		
P0.0.1	PLUMBING SCHEDULES, LEGEND & NOTES	●
P0.0.2	PLUMBING DETAILS	●
P1.0.0	PLUMBING SITE PLAN	●
P1.0.1	PLUMBING OVERALL FLOOR PLAN	●
P2.0.1	PLUMBING ROOF PLAN	●
P6.4.1.D	PLUMBING DEMO ENLARGED FLOOR PLAN	●
P6.4.1	PLUMBING ENLARGED FLOOR PLAN	●
70 - Electrical		
E0.0.1	ELECTRICAL SYMBOL LEGEND, NOTES & ABBREVIATIONS	●
E0.0.2	ELECTRICAL DETAILS	●
E6.4.1	ELECTRICAL ENLARGED FLOOR PLAN	●
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES	●
E2.0.1 D	ELECTRICAL DEMO OVERALL ROOF PLAN	●
E2.0.1	ELECTRICAL OVERALL ROOF PLAN	●

PARTIAL LIST OF APPLICABLE CODES

CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH:

2022 CALIFORNIA ADMINISTRATIVE CODE, C.C.R., TITLE 24, PART 1.

2022 CALIFORNIA BUILDING CODE (CBC), - C.C.R., TITLE 24, PART 2.
(2021 INTERNATIONAL BUILDING CODE, VOLUMES 1-2, & 2022 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ELECTRICAL CODE (CEC), - C.C.R., TITLE 24, PART 3.
(2017 NFPA 70, NATIONAL ELECTRICAL CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA MECHANICAL CODE (CMC), - C.C.R., TITLE 24, PART 4.
(2021 MECHANICAL CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA PLUMBING CODE (CPC), - C.C.R., TITLE 24, PART 5.
(2021 INTERNATIONAL PLUMBING CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA ENERGY CODE (CEC), - C.C.R., TITLE 24, PART 6.

2022 CALIFORNIA FIRE CODE, C.C.R., TITLE 24, PART 9.
(2021 INTERNATIONAL FIRE CODE, WITH CALIFORNIA AMENDMENTS)

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), C.C.R., TITLE 24, PART 11.

2022 CALIFORNIA REFERENCED STANDARDS, C.C.R., TITLE 24, PART 12.

C.C.R., PUBLIC SAFETY CODE, TITLE 19, DIVISION 1, STATE FIRE MARSHAL REGULATIONS

NOTES:
1. WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THESE CODES, INCLUDING REFERENCED STANDARDS WITHIN, AND APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED SUCH REQUIREMENTS, WITHOUT VIOLATING SUCH CODES, REGULATIONS AND ORDINANCES, CONTRACT DOCUMENTS TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

PROJECT SCOPE

DESCRIPTION OF OVERALL SCOPE OF WORK

THIS PROJECT IS LOCATED AT THE ALUM ROCK UNION SCHOOL DISTRICT OFFICE IN SAN JOSE, CA. THE SCOPE INCLUDES THE FOLLOWING:

A. A COMPLETE REROOF OF THE EXISTING ROOF.
B. UPGRADES TO THE HEATING AND COOLING SYSTEM IN THE SUPERINTENDENT'S OFFICE AND THE ENTRY LOBBY.

STATEMENT OF GENERAL CONFORMANCE

THE DRAWINGS AND/OR SPECIFICATIONS AND/OR CALCULATIONS FOR THE ITEMS LISTED IN THE SHEET INDEX HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1) DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS, AND

2) COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344 OF TITLE 24, PART 1 (TITLE 24, PART 1, SECTION 4-317(B))

SIGNATURE OF THE ARCHITECT — DATE
CHRIS VICENCIO, PARTNER, JK ARCHITECTURE

C26985 — 6/25/30

LICENSE NUMBER — EXPIRATION

PROJECT INFORMATION

PROJECT NAME:	ALUM ROCK USD HVAC & ROOFING UPGRADES
PROJECT ADDRESS:	2930 GAY AVE SAN JOSE, CA, 95127
AREA	
ROOF AREA	22,559 SF
BUILDING AREA	X
BUILDING USE	OFFICE
CONSTRUCTION TYPE	V-B
NUMBER OF STORIES	1
BLDG HEIGHT	XX' - X"

PROJECT TEAM

CLIENT:
ALUM ROCK UNION ELEMENTARY SCHOOL DISTRICT
CONTACT MARC FREITAS
TITLE BONDS DIRECTOR
ADDRESS 2930 GAY AVE, SAN JOSE, CA 95127
EMAIL Marc.freitas@arusd.org

ARCHITECT:
JK ARCHITECTURE ENGINEERING
CONTACT CHRIS VICENCIO
TITLE PARTNER, ARCHITECT OF RECORD
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PHONE (530) 888-0998
EMAIL chris@jkaedesign.com

CONTACT MANUEL ORDONEZ
TITLE PROJECT ARCHITECT
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PHONE (408) 708-9111
EMAIL manuel@jkaedesign.com

CONTACT HOLMAN VILCHEZ
TITLE PROJECT LEADER
ADDRESS 300 ORCHARD CITY DRIVE, SUITE 140 CAMPBELL, CA, 95008
PHONE (408) 502-2347
EMAIL hvilchez@jkaedesign.com

STRUCTURAL ENGINEER:
BUEHLER ENGINEERING INC.
CONTACT BRIAN WIENS
TITLE ASSOCIATE PRINCIPAL
ADDRESS 600 Q ST. #200, SACRAMENTO, CA 95811
PHONE (916) 443-0303
EMAIL bwiens@buehlerengineering.com

MECH/PLUMB ENGINEER:
LP CONSULTING ENGINEERS
CONTACT RYAN ENNIS
TITLE ASSOCIATE/PROJECT MANAGER
ADDRESS 1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
PHONE (916) 771-2907
EMAIL rennis@lpengineers.com

ELECTRICAL ENGINEER:
LP CONSULTING ENGINEERS
CONTACT RAHMAT NASIRI
TITLE ENGINEER
ADDRESS 1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
PHONE (916) 721-2923
EMAIL rnasiri@lpengineers.com

CONTACT RAMI ZEIDAN
TITLE SENIOR ELECTRICAL ENGINEER
ADDRESS 1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
PHONE (415) 843-5328
EMAIL rzeidan@lpengineers.com

FIRE PROTECTION ENGINEER:
LP CONSULTING ENGINEERS
CONTACT DAVID SOTO
TITLE ENGINEER
ADDRESS 1209 PLEASANT GROVE BLVD. ROSEVILLE, CA 95678
PHONE (916) 721-2902
EMAIL dsoto@lpengineers.com

SEAL

Project: ALUM ROCK UNION SCHOOL DISTRICT — HVAC AND ROOFING UPGRADES

Drawing Title: **COVER SHEET**

Drawn By: Author
Checked By: Checker

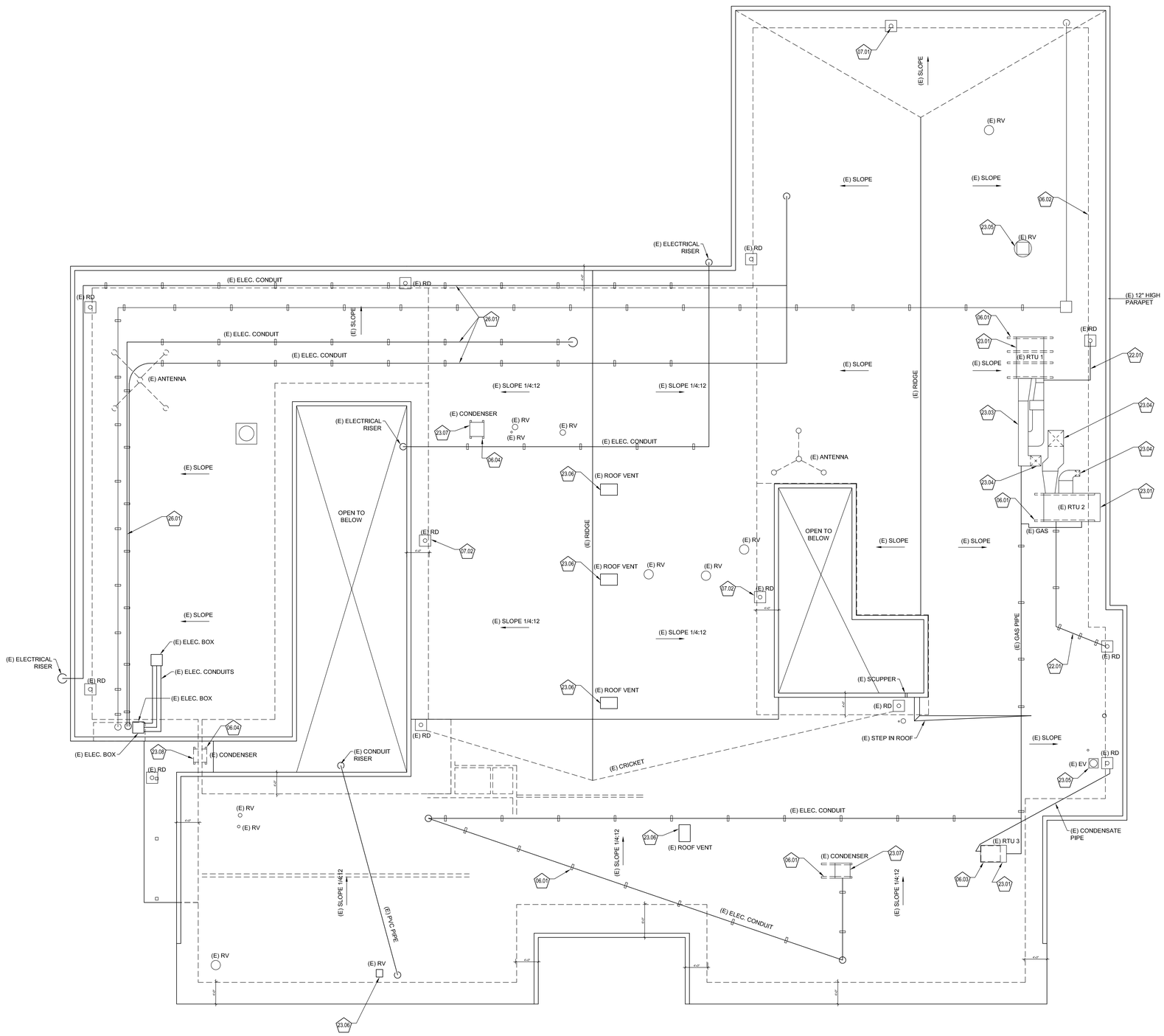
NO.	DATE	ISSUE

Project No.: 23-525
@Date: 01/05/23

DRAWING NO.: **G0.0**

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1 ROOF PLAN DEMOLITION - BUILDING 100

1/8" = 1'-0"

ROOF PLAN DEMOLITION GENERAL NOTES

1. REMOVE EXISTING B.U.R. ROOFING ASSEMBLY TO STRUCTURAL DECK.
2. REMOVE ROOFING, FLASHING AND ASSOCIATED SYSTEM MATERIALS AS REQUIRED TO PERFORM THE WORK.
3. NOT ALL COMPONENTS, EQUIPMENT, DUCTWORK, AND APPURTENANCES ARE SHOWN IN DRAWINGS. PRIOR TO BIDDING, THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND ACCOUNT FOR THE EXTENT OF ROOFTOP OBSTRUCTIONS (DUCTWORK, SLEEPERS, CONDUITS, ETC.) REQUIRED TO BE TEMPORARILY LIFTED AND REINSTALLED, IN ORDER TO PERFORM THE ROOFING WORK.
4. REMOVE ALL ABANDONED AND UNCONNECTED CONDUITS EXPOSED TO VIEW.
5. UPON REMOVAL OF THE EXISTING ROOFING WITHIN THE PROJECT AREA, THE CONTRACTOR SHALL VERIFY THE CONDITION OF THE EXISTING PLYWOOD DECK. DAMAGED PLYWOOD DECKING IS TO BE REMOVED AND REPLACED WITH NEW PLYWOOD DECKING TO MATCH EXISTING. THE CONTRACTOR SHALL CONFIRM THAT THE ROOFING SUBSTRATE COMPLIES WITH INSTALLATION OF THE ROOFING SYSTEM.
6. CONTRACTOR TO DISPOSE OF DEMOLISHED MATERIALS IN A LEGAL MANNER CONTRACTOR TO VERIFY THE DISPOSITION AND REMOVAL OF ANY ITEMS OF SALVAGEABLE VALUE.
7. EXISTING UTILITY PIPING, CONDUITS, FIXTURES, DEVICES, ETC., TO BE DISCONNECTED AND CAPPED/SAFED-OFF AS REQUIRED TO PERFORM WORK. ALL ITEMS ARE TO BE RECONNECTED/REINSTALLED UPON COMPLETION OF ROOFING WORK, TYP.
8. PRIOR TO PERFORMING THE WORK, NOTIFY THE ARCHITECT WHICH UTILITY PIPING, CONDUITS, FIXTURES, AND DEVICES WILL BE DISCONNECTED, CAPPED, OR SAFED-OFF.
9. CONTRACTOR SHALL WATER TEST ALL DRAINS PRIOR TO TEAR-OFF AND SHALL REPORT ANY ISSUES TO THE OWNER.
10. CONTRACTOR SHALL TEMPORARILY ELEVATE (E) CONDUITS OR PIPES IN ORDER TO REROOF EXISTING ROOF, RESET (E) CONDUITS.
11. CONTRACTOR SHALL TEMPORARILY ELEVATE (E) HVAC PACKAGED UNITS IN ORDER TO REROOF EXISTING ROOF, RESET (E) HVAC PACKAGED UNITS.
12. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DETAILS, MECHANICAL AND ELECTRICAL INFORMATION, AND REQUIREMENTS.
13. REFER TO STRUCTURAL DRAWINGS FOR DETAILED STRUCTURAL INFORMATION AND REQUIREMENTS.
14. EXISTING MECHANICAL DUCTS/DUCTWORK ON THE ROOF IS TO REMAIN. PROTECT IN PLACE.

ROOF PLAN DEMOLITION KEYNOTES

06.01 (E) WOOD SLEEPERS, TO BE REMOVED..
06.02 (E) WALL BELOW.
06.03 (E) WOOD HVAC CURB TO REMAIN.
06.04 (E) 4X WOOD SLEEPER TO BE REMOVED.

07.01 (E) ROOF DRAIN TO REMAIN U.N.O., TYPICAL.
07.02 (E) ROOF DRAIN TO BE REPLACED.

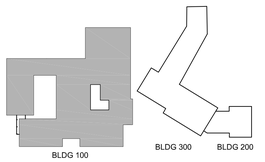
22.01 (E) CONDENSATE PIPING TO (E) ROOF DRAIN.

23.01 (E) MECHANICAL PACKAGED ROOF TOP UNIT TO REMAIN. RAISE UNIT AS REQUIRED FOR THE INSTALLATION OF NEW ROOFING MATERIAL.
23.02 (E) EXHAUST FANS TO REMAIN, TYP.
23.03 (E) EXPOSED DUCTWORK TO REMAIN. PROTECT IN PLACE. RAISE AS REQUIRED FOR THE INSTALLATION OF NEW ROOFING MATERIAL.
23.04 (E) DUCT THROUGH ROOF.
23.05 (E) ROOF VENT TO REMAIN, TYP. PROTECT IN PLACE. RAISE AS REQUIRED FOR THE INSTALLATION OF NEW ROOFING MATERIAL.
23.06 (E) STATIC ROOF VENT TO REMAIN. PROTECT IN PLACE.
23.07 (E) MECHANICAL CONDENSER UNIT TO REMAIN. RAISE UNIT AS REQUIRED FOR THE INSTALLATION OF NEW ROOFING MATERIAL.
23.08 (E) MECHANICAL CONDENSER UNIT TO BE REMOVED, SEE MECHANICAL DRAWINGS.

26.01 (E) (MULTIPLE) CONDUITS ON ROOF TO REMAIN.

100% SD REVIEW SET

JK ARCHITECTURE ENGINEERING
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www.jkaedesign.com



KEY PLAN

SEAL

LICENSED ARCHITECT
CHRISTOPHER C. OSGOOD
NO. C26985
REN. 6-30-25
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

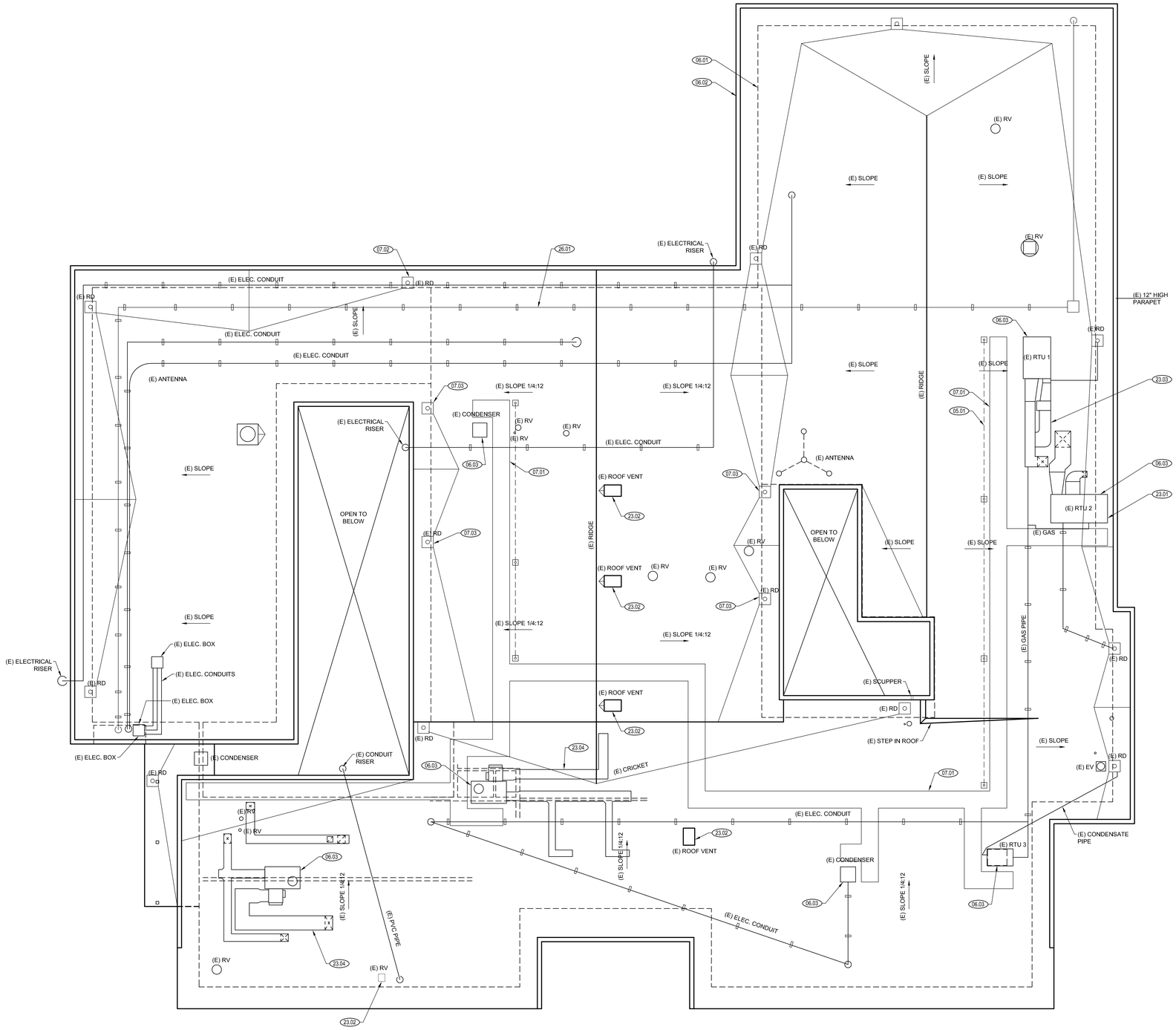
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ENLARGED ROOF PLAN DEMOLITION - BLDG 100

NO.	DATE	ISSUE

Drawn By: VJ
Checked By: HV
Project No.: 23-525
©Date: 01/05/2024
Drawing No.: D2

TRUE NORTH PROJECT NORTH

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1 ROOF PLAN - BUILDING 100
1/8" = 1'-0"

GENERAL NOTES

1. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES IN THE DRAWINGS, AND OF ANY DAMAGED OR SUSPECT MATERIALS THAT HAVE NOT BEEN IDENTIFIED AS REQUIRING REPLACEMENT OR CORRECTIVE ACTION, PRIOR TO PROCEEDING WITH THE WORK.
2. THE CONTRACTOR IS RESPONSIBLE FOR EXTENDING / MODIFYING ALL UTILITIES AS REQUIRED TO RECONNECT EQUIPMENT, FIXTURES AND DEVICES FOR A COMPLETE INSTALLATION, IN COMPLIANCE WITH ALL APPLICABLE CODES.
3. THE CONTRACTOR SHALL MAINTAIN THE BUILDING IN A WEATHER TIGHT CONDITION AGAINST INCLEMENT WEATHER AT ALL TIMES. USE THE APPROPRIATE INDUSTRY METHOD TO COVER AND PROTECT THE ROOF IN THE CASE OF RAIN OR INCLEMENT WEATHER.
4. PATCH AND REPAIR ALL DAMAGED / AFFECTED FINISHES TO MATCH EXISTING., INCLUDING BUT NOT LIMITED TO: PAINT, CEMENT PLASTER, AND WOOD SIDING/TRIM.
5. INSTALL NEW ROOF SLEEPERS FOR THE UTILITY PIPES/ CONDUITS OVER THE AREA OF ROOF TO BE REPLACED. USE 2X PRESSURE TREATED WOOD BLOCKS.
6. UPON REMOVAL OF THE EXISTING ROOFING CONTRACTOR SHALL VERIFY THAT THE EXISTING ROOF HAS A POSITIVE SLOPE, NOTIFY THE OWNER OF ANY NON-CONFORMANCE TO INSTALLATION OF NEW ROOFING SYSTEM.
7. AT COMPLETION OF PROJECT, DRAINS SHALL BE WATER TESTED AGAIN BY CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL BLOCKAGES OR PLUMBING LEAKS NOT REPORTED AT START OF PROJECT.
8. THE CONSTRUCTION DOCUMENTS ADDRESS KNOWN CONDITIONS, BUT IT IS ANTICIPATED THAT HIDDEN CONDITIONS WILL BE ENCOUNTERED DURING CONSTRUCTION.
9. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DETAILS, MECHANICAL AND ELECTRICAL INFORMATION, AND REQUIREMENTS.
10. REFER TO STRUCTURAL DRAWINGS FOR DETAILED STRUCTURAL INFORMATION AND REQUIREMENTS.
11. PROVIDE CRICKETS AT HIGH SIDE OF ALL ROOF MOUNTED EQUIPMENT TO INSURE POSITIVE DRAINAGE.
12. DO NOT CUT OR ALTER EXISTING ROOF RAFTERS. INSTALL NEW DUCT PENETRATIONS BETWEEN EXISTING ROOF RAFTERS WITH THE APPROPRIATE WOOD BLOCKING AS SHOWN ON THE STRUCTURAL DRAWINGS.

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ROOF PLAN KEYNOTES

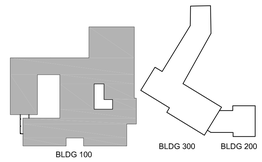
05.01 FALL ARREST POST AND WIRE.

06.01 (E) WALL BELOW.
06.02 (E) ROOF PARAPET, HEIGHT VARIES UP TO 12 INCHES HIGH.
06.03 PROVIDE WOOD HVAC CURB AT BASE OF EQUIPMENT.
06.04 (E) WOOD HVAC CURB TO REMAIN.
06.05 4X P.T. WOOD SLEEPERS.

07.01 ROOF WALKPAD.
07.02 (E) ROOF DRAIN, TYPICAL.
07.03 ROOF DRAIN.

23.01 (E) MECHANICAL PACKAGED ROOF TOP UNIT.
23.02 (E) STATIC ROOF VENT.
23.03 (E) EXPOSED DUCTWORK.
23.04 EXPOSED DUCTWORK, SEE MECHANICAL DRAWINGS.

26.01 (E) CONDUITS TO REMAIN, TYPICAL.



KEY PLAN

SEAL

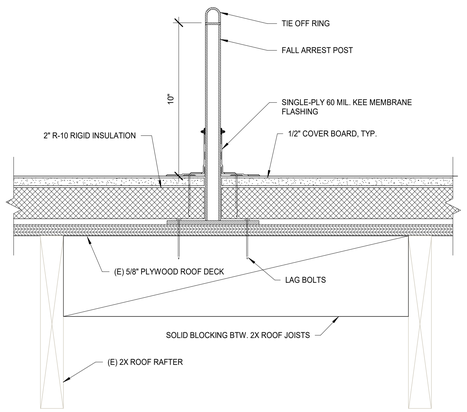
LICENSED ARCHITECT
CHRISTOPHER C. VIERGUTZ
NO. C26985
REN. 6-30-25
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

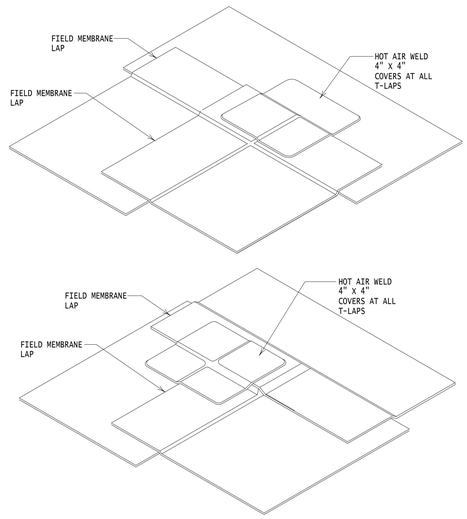
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ROOF PLAN BUILDING 100

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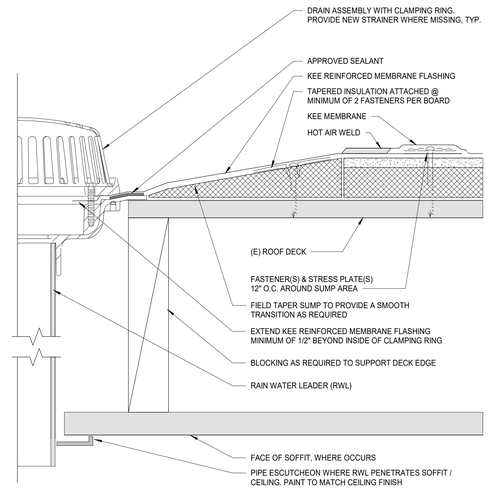
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Drawing No.: **A2**



12 ROOF FALL ARREST POST
3" = 1'-0"



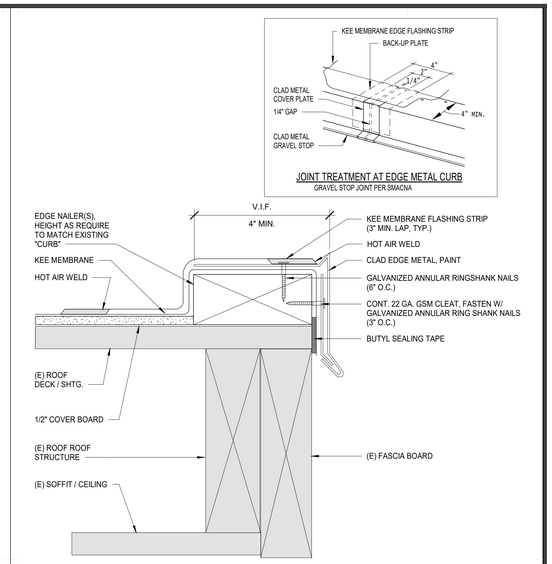
9 KEE TYPICAL COVERS AT MEMBRANCE T-LAPS
NTS



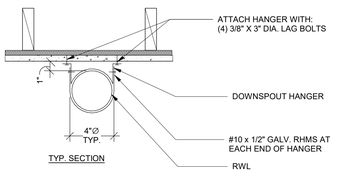
NOTES

1. USE TAPERED ROOF INSULATION (EDGE STRIPS) TO CREATE DRAIN SUMP. IF TOTAL INSULATION THICKNESS IS LESS THAN OR EQUAL TO 1 1/2 IN., TAPER 12 IN. FROM THE DRAIN CENTER. IF TOTAL INSULATION THICKNESS IS GREATER THAN 1 1/2 IN., TAPER 18 IN. FROM DRAIN CENTER.

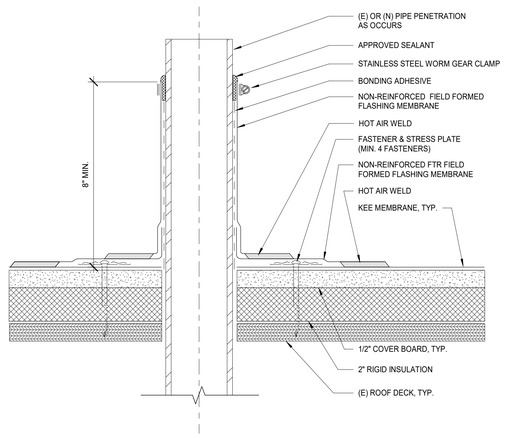
6 TYPICAL REINFORCED DRAIN FLASHING AT (E) OR NEW ROOF DRAINS
NTS



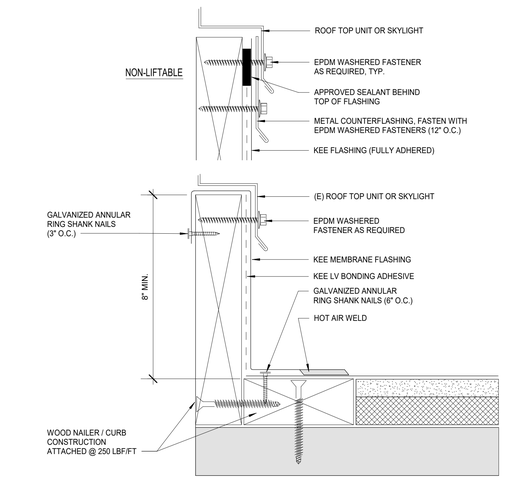
3 KEE TERMINATION AT EDGE CURB
NTS



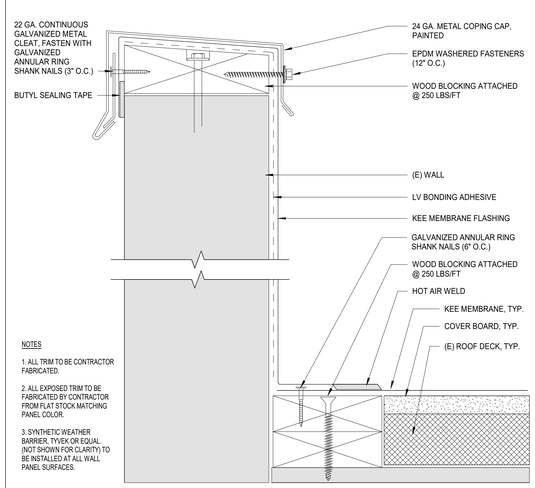
11 DOWNSPOUT ATTACHMENT
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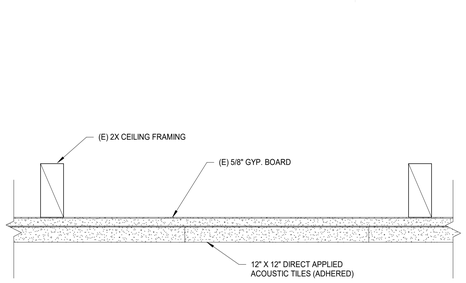
8 KEE FIELD FABRICATED PIPE FLASHING
N.T.S.



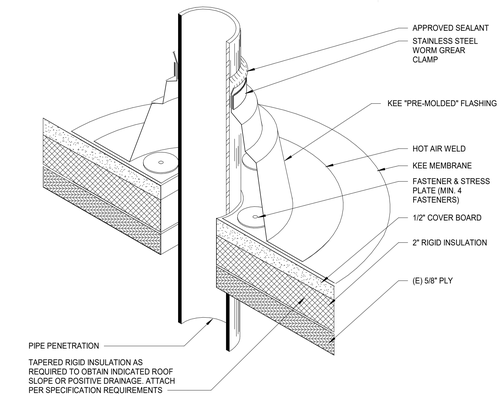
5 TYPICAL WOOD CURB
NTS



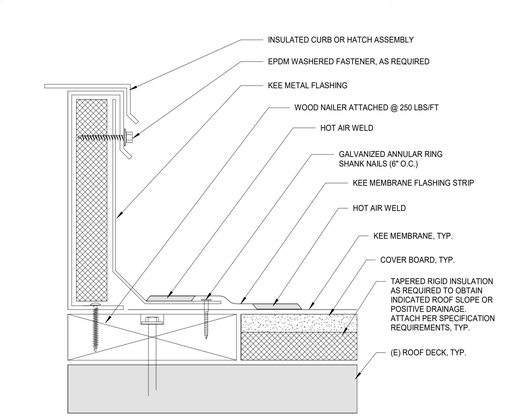
2 KEE WALL FLASHING WITH METAL CAP FLASHING
NTS



10 GLUE-UP CEILING TILE PATCH BACK
3" = 1'-0"

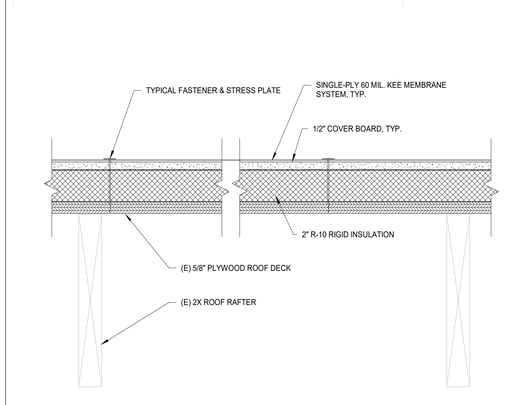


7 PRE-MOLDED PIPE FLASHING
NTS



6 KEE INSULATED MECHANICAL CURB
N.T.S.

4 INSULATED MECHANICAL CURB
NTS



1 TYPICAL ROOF ASSEMBLY
3" = 1'-0"

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SEAL

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES

Drawing Title
ROOF DETAILS

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NO.	DATE	ISSUE

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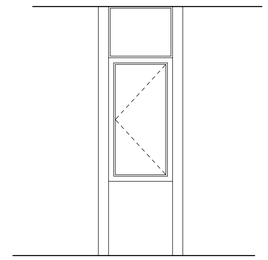
DRAWING NO.
A5.1

Autodesk Docs://23-525 HVAC Upgrades/23-525 HVAC Upgrades.rvt
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100% SD REVIEW SET

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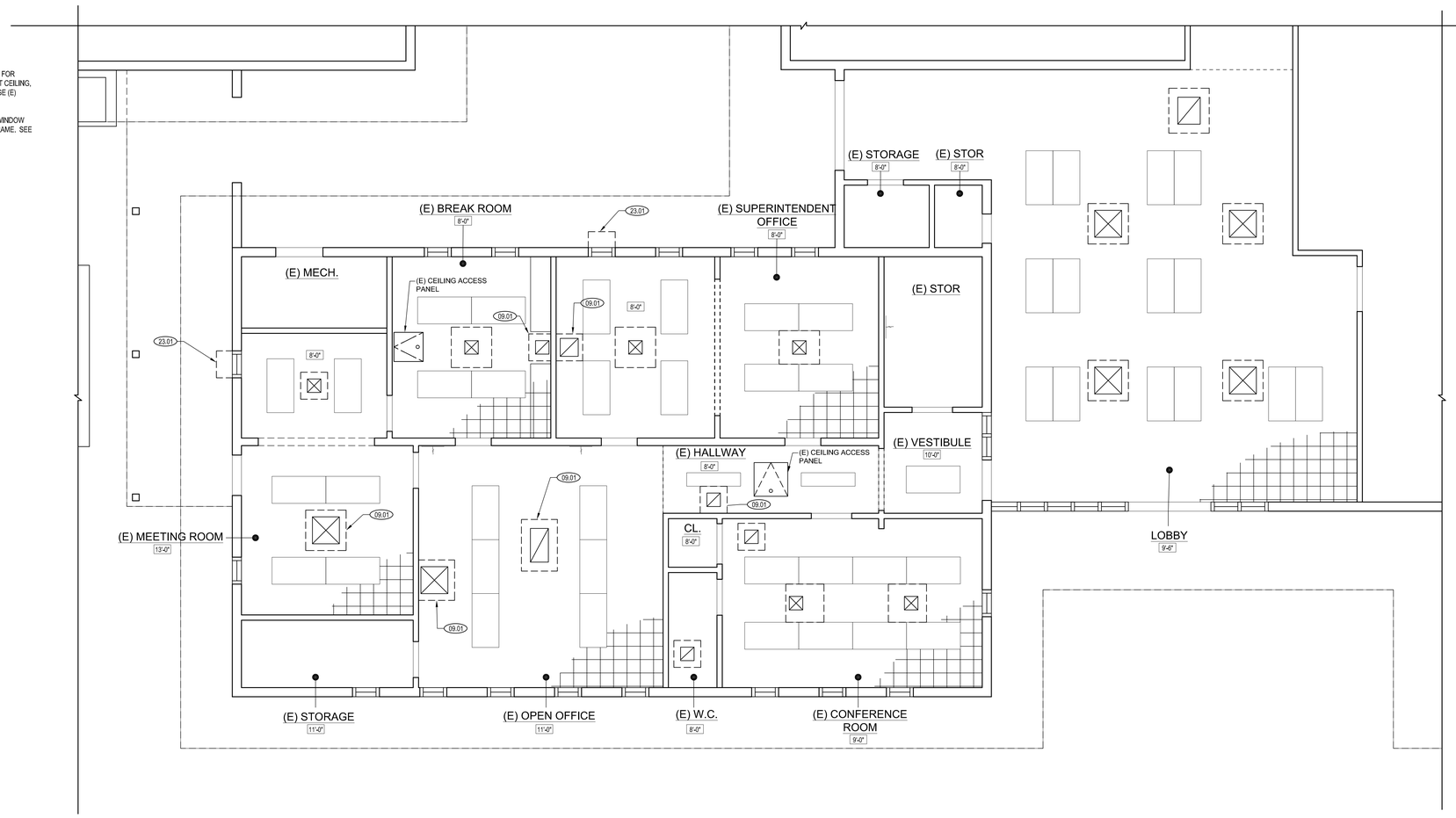


2 WINDOW ELEVATION
1/2" = 1'-0"

RCP KEYNOTES

09.01 REMOVE (E) ACOUSTICAL TILES O/GYP BD AS NEEDED FOR REPLACEMENT OF MECHANICAL CEILING REGISTER AT CEILING, S.M.D FOR ADDITIONAL INFORMATION, DO NOT DAMAGE (E) CEILING JOIST SYSTEM

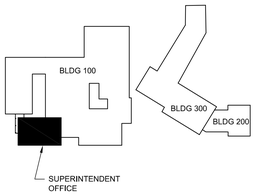
23.01 (E) AIR CONDITIONING UNIT TO BE REMOVED. INFILL WINDOW WITH NEW GLAZING SET IN THE EXISTING WINDOW FRAME. SEE ELEVATION ON 2/A7.1.



1 PARTIAL REFLECTED CEILING PLAN
1/4" = 1'-0"

LEGEND

- (E) CEILING ACCESS PANEL
- (E) 12X12 ACCOUSTIC TILE
- (E) SURFACE MOUNTED LIGHT FIXTURES
- (E) MECH CEILING SUPPLY AND RETURN GRILLES
- (E) WALL MECH REGISTER GRILLE



KEY PLAN

SEAL

LICENSED ARCHITECT
CHRISTOPHER C. VIDERING
NO. C26985
REN. 6-30-25
STATE OF CALIFORNIA

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

Drawing Title
ENLARGED REFLECTED CEILING PLAN

Drawn By: VJ
Checked By: HV

NO.	DATE	ISSUE

Project No.: 23-525
©Date: 01/05/2024

Drawing No.
A7.1

GENERAL NOTES

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

GENERAL NOTES

100SN001

1. INTERPRETATION OF DRAWINGS & SPECIFICATIONS
   A. WHERE SPECIFICATIONS HAVE BEEN PREPARED FOR THIS PROJECT, THEY ARE ARRANGED IN SEVERAL SECTIONS, BUT SUCH SEPARATION SHALL NOT BE CONSIDERED AS THE LIMITS OF THE WORK REQUIRED OF ANY SEPARATE TRADE. THE TERMS AND CONDITIONS OF SUCH LIMITATIONS ARE WHOLLY BETWEEN THE CONTRACTOR AND THEIR SUBCONTRACTORS.
   B. IN GENERAL, THE WORKING DETAILS WILL INDICATE DIMENSIONS, POSITION AND KIND OF CONSTRUCTION, AND THE SPECIFICATIONS, QUALITIES AND METHODS. ANY WORK INDICATED ON THE WORKING DETAILS AND NOT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, SHALL BE FURNISHED AS THOUGH FULLY SET FORTH IN BOTH. WORK NOT PARTICULARLY DETAILED, MARKED OR SPECIFIED, SHALL BE IDENTICAL OR SIMILAR TO LIKE CASES OF CONSTRUCTION THAT ARE DETAILED, MARKED OR SPECIFIED. IF CONFLICTS OCCUR ON DRAWINGS AND/OR SPECIFICATIONS, THE MOST EXPENSIVE MATERIALS OR METHODS WILL PREVAIL.
   C. SHOULD AN ERROR APPEAR IN THE WORKING DETAILS OR SPECIFICATIONS OR IN WORK DONE BY OTHERS AFFECTING THIS WORK, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AT ONCE AND IN WRITING. IF THE CONTRACTOR PROCEEDS WITH THE WORK SO AFFECTED WITHOUT HAVING GIVEN SUCH WRITTEN NOTICE AND WITHOUT RECEIVING THE NECESSARY APPROVAL, DECISION OR INSTRUCTIONS IN WRITING FROM THE OWNER, THEN THE CONTRACTOR SHALL HAVE NO VALID CLAIM AGAINST THE OWNER, FOR THE COST OF SO PROCEEDING AND SHALL MAKE GOOD ANY RESULTING DAMAGE OR DEFECT. NO VERBAL APPROVAL, DECISION, OR INSTRUCTION SHALL BE VALID OR BE THE BASIS FOR ANY CLAIM AGAINST THE OWNER, ITS OFFICERS, EMPLOYEES OR AGENTS. THE FOREGOING INCLUDES TYPICAL ERRORS IN THE SPECIFICATIONS OR NOTATIONAL ERRORS IN THE WORKING DETAILS WHERE THE INTERPRETATION IS DOUBTFUL OR WHERE THE ERROR IS SUFFICIENTLY APPARENT AS TO PLACE A REASONABLY PRUDENT CONTRACTOR ON NOTICE THAT, SHOULD THE CONTRACTOR ELECT TO PROCEED, THEY ARE DOING SO AT THEIR OWN RISK.
2. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS.
3. SHOP DRAWING NOTE:
   A. WHEN NOT ADDRESSED BY DIVISION 1 OF THE SPECIFICATIONS, SUBMITTALS SHALL BE ELECTRONIC PDF FORMAT.
   B. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE STRUCTURAL ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL THE CONTRACTOR INTENDS TO FURNISH AND INSTALL, AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS THE CONTRACTOR INTENDS TO USE ON A STAND ALONE SET OF DOCUMENTS. DUPLICATION OF DESIGN DOCUMENTS FOR THE PURPOSE OF SHOP DRAWINGS IS NOT ACCEPTABLE.
   C. PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER. SHOP DRAWING SUBMITTALS SHALL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, STRUCTURAL STEEL, REINFORCING STEEL, & GLUE-LAMINATED BEAMS.
   D. PRIOR TO SUBMISSION THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL STAMP SUBMITTALS AS BEING "REVIEWED FOR CONFORMANCE".
   E. SHOP DRAWING SUBMITTALS PROCESSED BY THE STRUCTURAL ENGINEER ARE NOT CHANGE ORDERS.
   F. ANY DETAIL ON THE SHOP DRAWINGS THAT DEVIATES FROM THE CONTRACT DOCUMENTS SHALL CLEARLY BE MARKED WITH THE NOTE "THIS IS A CHANGE".
   G. SHOP DRAWINGS OR CALCULATIONS SUBMITTED FOR REVIEW THAT REQUIRE RESUBMITTAL FOR RE-REVIEW SHALL BE BILLED HOURLY FOR SUCH TIME TO THE GENERAL CONTRACTOR. RE-REVIEW WILL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE GENERAL CONTRACTOR FOR ADDITIONAL ENGINEERING REVIEW SERVICES.
4. SAFETY NOTE:
   A. IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS, AS THEY APPLY TO THIS PROJECT, OF THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF CALIFORNIA LATEST EDITION, AND ALL OSHA REQUIREMENTS.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED. SHORING INDICATIONS (LOCATION, DIRECTION, DURATION, ETC.) ARE ONLY SHOWN ON THE STRUCTURAL DWGS WHEN REQUIRED TO IMPLEMENT THE DESIGN INTENT OF THE FINAL WORK PRODUCT. DETERMINATION WHETHER SHORING IS REQUIRED FOR TEMPORARY OR INTERMEDIATE CONDITIONS DURING CONSTRUCTION IS WHOLLY THE RESPONSIBILITY OF THE CONTRACTOR.
   C. THE OWNER AND THE STRUCTURAL ENGINEER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.
5. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS. SUCH NOTIFICATION SHALL BE GIVEN IN DUE TIME SO AS NOT TO AFFECT THE CONSTRUCTION SCHEDULE. IN CASE OF A CONFLICT BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS THE MORE RESTRICTIVE CONDITION SHALL TAKE PRECEDENCE UNLESS WRITTEN APPROVAL HAS BEEN GIVEN FOR THE LEAST RESTRICTIVE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PRIOR TO COMMENCING ANY WORK.
6. WHEN CONSTRUCTION ATTACHES TO OR IS WITHIN AN EXISTING BUILDING, A COMPLETE SET OF DRAWINGS OF THE EXISTING BUILDING SHALL BE KEPT ON THE JOB SITE. CONTRACTOR TO OBTAIN THESE DRAWINGS FROM THE OWNER (IF THEY ARE AVAILABLE).
7. CONTRACTOR SHALL PROVIDE AN ALLOWANCE EQUAL TO 2% OF THE BID FOR STRUCTURAL STEEL, MISC. IRON AND REINFORCING STEEL TO BE USED AT THE DISCRETION OF THE STRUCTURAL ENGINEER. UNUSED AMOUNT TO REVERT TO THE OWNER UPON COMPLETION OF THE JOB.
8. ANY SUBSTITUTIONS FOR STRUCTURAL MEMBERS, HARDWARE OR DETAILS SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER. SUCH REVIEW WILL BE BILLED ON A TIME AND MATERIALS BASIS TO THE GENERAL CONTRACTOR WITH NO GUARANTEE THAT THE SUBSTITUTION WILL BE ALLOWED.
9. DO NOT SCALE DRAWINGS. CONTACT THE ARCHITECT OR STRUCTURAL ENGINEER FOR ANY DIMENSIONS NOT SHOWN.
10. THESE DRAWINGS ARE NOT COMPLETE UNTIL REVIEWED AND ACCEPTED BY LOCAL BUILDING OFFICIALS AND THE OWNER AND SIGNED BY THE STRUCTURAL ENGINEER.

DESIGN CRITERIA

100SN002

1. CODES AND STANDARDS
   2022 CALIFORNIA BUILDING CODE (CBC)
   ASCE 7-16
   ACI 318-19
   AISC 360-16, 341-16, 358-16
   AISI S100-16 w/ S2-20, S240-20, S400-20
   2018 NDS, 2021 SDPWS
2. VERTICAL LOADS
   ROOF LIVE LOAD = 20 PSF
   LIVE LOADS ARE REDUCED WHERE PERMITTED BY CODE.
3. LATERAL LOADS
   SEISMIC:
   SITE CLASS D (assumed)
   S_S = 1.94 ; S_{DS} = 1.552
   S_1 = 0.743 ; S_{D1} = N/A
   I_E = 1.0
   I_P = 1.0 TYPICAL
   RISK CATEGORY: II
   SEISMIC DESIGN CATEGORY: D
   WIND:
   V = 92 MPH
   RISK CATEGORY: II
   EXPOSURE CATEGORY: C
   GC_{PI} = ±0.18

STRUCTURAL STEEL

500SN001

1. FABRICATION, ERECTION AND MATERIALS SHALL CONFORM WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, THE AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS AND THE AISC CODE OF STANDARD PRACTICE, LATEST EDITIONS ADOPTED BY THE BUILDING CODE SPECIFIED IN THE DESIGN CRITERIA NOTES, UNO.
2. ALL HOT ROLLED STEEL SHAPES, PLATES AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM A6, UNO IN THE STRUCTURAL DRAWINGS. STRUCTURAL STEEL SHALL BE AS FOLLOWS:
   A. WIDE FLANGE AND WT SHAPES: ASTM A992
   B. M- AND S- SHAPES: ASTM A36
   C. C- AND MC- SHAPES: ASTM A992
   D. L- SHAPES: ASTM A572 GRADE 50
   E. ROUND HSS: ASTM A500 GRADE C (Fy = 46 KSI)
   F. RECTANGULAR HSS: ASTM A500 GRADE C (Fy = 50 KSI)
   G. PIPE: ASTM A53, GRADE B (Fy = 35 KSI)
   H. BASE PLATES UP TO 4" THICK: ASTM A572 GRADE 50
   I. ALL OTHER PLATE MATERIAL: ASTM A572 GRADE 50, UNO
   J. BUILT UP COLUMNS: ASTM A572 GRADE 50
   K. PLATE GIRDERS: ASTM A572 GRADE 50
   L. CONNECTION MATERIAL
      a. COLUMN CONTINUITY PLATES AND DOUBLER PLATES: ASTM A572 GRADE 50
      b. BRACED FRAME GUSSET PLATES: ASTM A572 GRADE 50
3. ALL STRUCTURAL STEEL SHALL RECEIVE A MINIMUM OF ONE SHOP COAT OF RED PRIMER PAINT. DO NOT PAINT AREAS TO BE FIELD WELDED, FIREPROOFED, GALVANIZED, TO RECEIVE SLIP-CRITICAL HIGH STRENGTH BOLTS, OR TO BE EMBEDDED IN CONCRETE. PROVIDE ADDITIONAL PAINTING AS NOTED IN THE SPECIFICATIONS.
4. ALL STRUCTURAL STEEL SHALL BE ERECTED PLUMB AND TRUE TO LINE. TEMPORARY BRACING SHALL BE INSTALLED AND SHALL BE LEFT IN PLACE UNTIL OTHER MEANS ARE PROVIDED TO ADEQUATELY BRACE THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL BASE PLATE AND SUPPORT CONDITIONS DURING ERECTION AND BRACING AS REQUIRED. SEE AISC AND OSHA REQUIREMENTS.
5. GROUT BELOW BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI UNO. COLUMN BASE PLATES SHALL BE PROMPTLY GROUTED AFTER STEEL FRAME HAS BEEN PLUMBED AND PRIOR TO INSTALLATION OF METAL DECKING.
6. STRUCTURAL STEEL BELOW GRADE SHALL HAVE 3 INCHES MINIMUM OF CONCRETE COVER.
7. STRUCTURAL BOLTS AND THREADED FASTENERS
   A. BOLTED CONNECTIONS SHALL CONSIST OF UNFINISHED BOLTS CONFORMING TO ASTM F3125 GRADE A325 UNO.
   B. WHERE HIGH-STRENGTH BOLTS ARE SPECIFIED, BOLTS CONFORMING TO ASTM F3125 GRADE A325 OR GRADE A490 SHALL BE PROVIDED AS INDICATED. HIGH STRENGTH BOLTS IN SLIP-CRITICAL AND PRETENSION JOINTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1852 FOR TWIST-OFF TYPE TENSION CONTROL BOLT PRETENSIONING OR BE PROVIDED WITH DIRECT TENSION INDICATOR WASHERS CONFORMING TO THE REQUIREMENTS OF ASTM F959.
   C. ANCHOR RODS CAST IN CONCRETE OR MASONRY SHALL BE HEADED BOLTS WITH CUT THREAD, FULL DIAMETER BODY STYLE CONFORMING TO ASTM F1554 GRADE 36, 55 (WELDABLE PER S1 SUPPLEMENTARY REQUIREMENTS), OR GRADE 105 AS INDICATED ON DRAWINGS. IN LIEU OF HEADED ANCHOR RODS, THREADED ROD CONFORMING TO THE ABOVE SPECIFICATIONS MAY BE USED WITH A SINGLE NUT WELDED TO THE ROD OR DOUBLE NUTS TIGHTENED TO PREVENT ROTATION. ANCHOR ROD PROJECTION ABOVE TOP OF FOUNDATION SHALL BE AS NOTED ON THE DRAWINGS.
   D. BOLTED CONNECTIONS SHALL HAVE WASHERS CONFORMING TO ASTM F436 UNO. WASHERS MAY BE OMITTED AT SNUG-TIGHTENED AND SLIP-CRITICAL CONNECTIONS, EXCEPT WHERE REQUIRED BY THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS, LATEST EDITION.
   E. BASE PLATES SHALL HAVE NUTS AND WASHERS AT TOP AND BOTTOM OF PLATE. WASHERS FOR BASE PLATES SHALL BE A36 SQUARE OR CIRCULAR PLATE UNLESS ASTM F844 WASHERS ARE PERMITTED. SEE BASE PLATE DETAILS FOR PLATE WASHER SIZE AND PERMISSIBLE WASHER TYPE.
   F. THREADED RODS SHALL CONFORM TO ASTM A36 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   G. PINS: ALL PINS IN PIN CONNECTED MEMBERS SHALL CONFORM TO ASTM A36 OR ASTM A108 AS INDICATED ON THE DRAWINGS.
8. ADDITIONAL REQUIREMENTS FOR "SLIP-CRITICAL" BOLTED CONNECTIONS:
   A. "SLIP-CRITICAL" CONNECTIONS (A325-SC DESIGN VALUES WITH SPECIAL INSPECTION) ARE REQUIRED AT ALL MOMENT FRAME CONNECTIONS, BRACED FRAME CONNECTIONS, AT ALL CONNECTIONS ALONG CHORD LINES AND DRAG LINES (AS NOTED ON PLANS), AND UNO, AT ALL BOLTS IN OVERSIZED OR SLOTTED HOLES.
   B. THE SPECIAL INSPECTOR MUST BE PRESENT DURING THE INSTALLATION AND TIGHTENING OPERATION OF "SLIP-CRITICAL" CONNECTIONS.
9. PROVIDE 3/4" DIAMETER STITCH BOLTS AND RING FILLS, SPACED AT NOT MORE THAN 2'-0" ON CENTER FOR ALL DOUBLE ANGLE MEMBERS UNO.
10. AT WOOD TO STEEL PARALLEL CONTACT, BOLT WITH 1/2" DIAMETER BOLTS AT MAXIMUM 24"CC UNLESS NOTED OTHERWISE IN THE DRAWINGS.
11. BOLT HOLES SHALL BE AISC STANDARD HOLES UNLESS SPECIFIED OTHERWISE. USE STANDARD AISC GAGE AND PITCH FOR BOLTS EXCEPT AS NOTED OTHERWISE.
12. WELDING SHALL BE DONE BY THE ELECTRIC ARC PROCESS IN ACCORDANCE WITH AMERICAN WELDING SOCIETY STANDARDS, USING ONLY CERTIFIED WELDERS. ALL GROOVE WELDS SHALL HAVE COMPLETE PENETRATION UNLESS NOTED OTHERWISE. ALL ELECTRODES FOR WELDING SHALL COMPLY WITH AWS D1.1 AND D1.8 AS APPLICABLE, E70 SERIES MINIMUM.
13. WELD LENGTHS SPECIFIED ON PLANS ARE THE NET EFFECTIVE LENGTHS REQUIRED.
14. MINIMUM FILLET WELDS: (T = THICKNESS OF THINNER PART JOINED)
    3/16" @ T < 1/2"
    1/4" @ T < 3/4"
    5/16" @ T > 3/4"
15. WELDING PROCEDURE SPECIFICATIONS (WPS) FOR SHOP AND FIELD PREQUALIFIED WELD JOINTS AND WELD JOINTS QUALIFIED BY TEST SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER AND THE OWNER'S TESTING LABORATORY PRIOR TO FABRICATION. ALL WELDING PROCEDURE ITEMS SUCH AS BASE METALS, WELDING PROCESSES, FILLER METALS AND JOINT DETAILS THAT MEET THE REQUIREMENTS OF AWS D1.1 SECTION 3 SHALL BE CONSIDERED AS PREQUALIFIED. ANY CHANGE OR SUBSTITUTION THAT IS BEYOND THE RANGE OR TOLERANCE OR REQUIREMENTS FOR PREQUALIFICATION SHALL BE QUALIFIED BY TEST PER AWS D1.1 SECTION 4 PART B. SUBMIT TEST REPORTS SHOWING SUCCESSFUL PASSAGE OF QUALIFICATION TESTS FOR ALL NON-PREQUALIFIED WELDING PROCEDURE SPECIFICATIONS.

WOOD

600SN001

1. ALL STRUCTURAL WOOD SHALL CONFORM WITH THE FOLLOWING SPECIFICATIONS: SPECIES COMBINATION SHALL BE DOUG FIR - LARCH PER WCLIB GRADING RULES #17 OR WWPA STANDARD GRADING RULES FOR WESTERN LUMBER. DOUGLAS FIR – LARCH (NORTH) AND DOUGLAS FIR (SOUTH) ARE NOT PERMITTED WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
   2x, 3x AND 4x MEMBERS - #2 UNO.
   6x AND LARGER MEMBERS - #1 UNO.
   2x DECKING - SELECT DEX
   MEMBERS 3x AND LARGER SHALL BE FREE OF HEART CENTER
   REDWOOD - CALIFORNIA REDWOOD, RIS.
   SHEATHING - US PRODUCT STANDARD PS 1-09 AND PS2-10. APA RATED
   SHEATHING w/ EXTERIOR GLUE @ WALLS, FLOORS, & ROOFS UNO
   PRESSURE TREATED DOUGLAS FIR - TYPE AS APPROPRIATE FOR EXTERIOR ABOVE GROUND USE AS SPECIFIED, BY AWPA.
2. ALL WOOD IN DIRECT CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED, EXCEPT LEDGERS, WHICH DO NOT NEED TO BE PRESSURE TREATED.
3. FIELD CUTS AND BOLT HOLES IN PRESSURE TREATED WOOD SHALL BE PROTECTED IN ACCORDANCE WITH AWPA STANDARD M4.
4. BEARING AND SHEAR WALLS SHALL HAVE DOUBLE TOP PLATES, LAPPED AT WALL AND PARTITION INTERSECTION WITH (3) 16d NAILS. SPLICE UPPER AND LOWER PLATES AS IN "TYPICAL STUD WALL & OPENING FRAMING DETAIL" ON TYPICAL DETAIL SHEET .
5. PROVIDE SOLID BLOCKING BETWEEN JOISTS AND RAFTERS AT ALL SUPPORTS.
6. PROVIDE BLOCKING AS REQUIRED AT CEILINGS, WALL FINISHES, FIRE BLOCKING, BACKING ETC.
7. JOISTS UNDER AND PARALLEL TO PARTITIONS SHALL BE DOUBLED AND NAILED TOGETHER.
8. THE MOISTURE CONTENT OF 2x MATERIAL AT TIME OF INITIAL USE SHALL BE LESS THAN 19%. THE MOISTURE CONTENT OF LUMBER 3x AND LARGER AT TIME OF INITIAL USE SHALL BE LESS THAN 30% UNO.
9. HOLES FOR BOLTS IN WOOD SHALL BE BORED WITH A BIT OF THE SAME NOMINAL DIAMETER AS THE BOLT PLUS 1/16".
10. HOLES FOR LAG SCREWS SHALL BE FIRST BORED TO THE SAME DIAMETER AND DEPTH AS THE UNTHREADED SHANK. THE THREADED PORTION SHALL BE DRILLED TO 50% OF THE SHANK DIAMETER UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS.
11. LAG SCREWS AND WOOD SCREWS SHALL BE SCREWED AND NOT DRIVEN INTO PLACE. SOAP MAY BE USED TO LUBRICATE SCREWS.
12. ALL BOLTS, LAG SCREWS AND POST-INSTALLED ANCHORS SHALL BE PROVIDED WITH METAL WASHERS UNDER HEADS AND NUTS WHICH BEAR ON WOOD. STEEL WASHERS SHALL BE SIMPSON BP OR BPS TYPE (3" SQ MIN w/ STD CUT WASHER WHERE REQD BY CODE). MALLEABLE IRON (MI) WASHERS SHALL BE ROUND AND CAST. STANDARD FLAT WASHERS SHALL BE PER ANSI B18.22.1 TYPE A - WIDE PATTERN. FOR WASHERS AT SILL ANCHORS, SEE SCHEDULE:

SILL ANCHOR BOLT WASHER SCHEDULE

WALL TYPE	2x4	2x6	2x8 & LARGER 1 SIDE SHTG	2x8 & LARGER 2 SIDES SHTG
WASHER DESIGNATION	BPS 5/8-3	BPS 5/8-6	BPS 5/8-6	3GA x 3" x STUD WIDTH - 1/2" w/ 11/16"Ø @ CL

13. ALL BOLTS AND LAG SCREWS SHALL BE TIGHTENED ON INSTALLATION AND RETIGHTENED BEFORE CLOSING IN OR AT COMPLETION OF JOB.
14. ALL BOLTS SHALL BE FULL NOMINAL DIMENSION AT UNTHREADED PORTION. NO UPSET THREADED BOLTS ALLOWED.
15. ALL FASTENERS, INCLUDING NUTS AND WASHERS, IN CONTACT w/ PRESERVATIVE-TREATED OR FIRE-RETARDANT MATERIAL SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL. BOLTS MAY BE HOT-DIPPED OR MECHANICALLY DEPOSITED ZINC-COATED STEEL. PLAIN CARBON STEEL FASTENERS ARE PERMITTED IN CONTACT w/ SBX/DOT OR ZINC BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT.
16. USE OF MACHINE NAILING IS SUBJECT TO SATISFACTORY REVIEW FOR EACH PROJECT AND SUBJECT TO APPROVAL BY THE GOVERNING AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING WILL NOT BE APPROVED IN 5/16" SHEATHING. IF NAIL HEADS PENETRATE THE OUTER PLY BY MORE THAN WOULD BE NORMAL FOR A HAMMER OR IF MINIMUM ALLOWABLE EDGE DISTANCES ARE NOT MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY.
17. BLOCK SHTG JOINTS WITH 2x4 FLAT BLOCKING WHERE NOTED ON ROOF OR FLOOR FRAMING PLANS AND WITH BLOCKING SAME SIZE AS STUDS AT WALLS. USE PLYCLIPS AT MIDSPAN OF UNSUPPORTED ROOF SHEATHING EDGES.
18. FRAMING HARDWARE SHOWN ON THE PLANS IS SIMPSON STRONG-TIE. USE FRAMING HARDWARE AS MANUFACTURED BY SIMPSON COMPANY OR EQUIVALENT. PRIOR TO INSTALLATION OF ANY NON-SIMPSON HARDWARE, THE CONTRACTOR SHALL SUBMIT A LIST OF ALL DETAIL REFERENCES WHERE A HARDWARE SUBSTITUTION IS PROPOSED, THE DESIGNATION FOR THE SIMPSON ITEM AND NON-SIMPSON PROPOSED EQUIVALENT AND AN ICC REPORT FOR EACH SUBSTITUTION ITEM.
19. LAY ALL STRUCTURAL SHEATHING ON ROOF AND FLOORS WITH LONG DIMENSION PERPENDICULAR TO SUPPORTS UNLESS NOTED OTHERWISE.
20. NOTIFY STRUCTURAL ENGINEER AFTER WALL, FLOOR, AND ROOF SHTG NAILING HAS BEEN COMPLETED AND A MINIMUM OF 48 HOURS PRIOR TO CONCEALING NAILING.

SIMPSON HARDWARE

600SN004

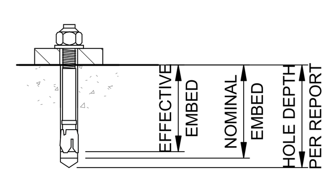
1. UNLESS SPECIFICALLY NOTED OTHERWISE, HARDWARE SPECIFIED ON THE DRAWINGS SHALL BE SIMPSON HARDWARE.
2. SIMPSON HARDWARE FOR THIS PROJECT HAS BEEN SPECIFIED BASED ON THE ALLOWABLE LOAD VALUES AND PRODUCT INFORMATION GIVEN IN THE SIMPSON CATALOG FOR THE YEAR THAT THESE DRAWINGS ARE DATED.
3. PLANS, SECTIONS AND DETAILS INDICATE GENERAL PRODUCT TYPE AND ANY REQUIRED MODIFICATIONS (I.E.: SLOPES AND SKEWS). SPECIFIC CATALOG CALL OUTS ARE DETERMINED BY INDIVIDUAL MEMBER SIZES.
   EXAMPLES:
   PLANS/SECTIONS INDICATE 2x10 MEMBERS SUPPORTED BY SIMPSON 'U' HANGERS. SIMPSON CALL-OUT: U210.
   PLANS/SECTIONS INDICATE 5-1/8"x18" GLB SUPPORTED BY 4X6 POST AND SIMPSON ECC CAP. SIMPSON CALL-OUT: ECC5&1/4-4 OR OPTION WITH STRAPS ROTATED 90° ECC5&1/4-6
4. WHERE THE SIMPSON CATALOG INDICATES TWO SIZES MAY BE USED FOR THE SAME SIZE MEMBER, USE THE LARGER SIZE.
   EXAMPLE:
   PLANS/SECTIONS INDICATE 4x8 MEMBER SUPPORTED BY SIMPSON LUS HANGERS. SIMPSON CATALOG INDICATES LUS46 OR LUS48 MAY BE USED. THE LUS48 SHALL BE USED UNO.
5. USE SIMPSON 'MAX' NAILING CONFIGURATION ("FILL ALL HOLES WITH NAILS"), TYPICAL UNO.
6. WHERE MULTIPLE NAIL SIZES ARE INDICATED IN SIMPSON CATALOG, USE LARGEST NAIL SIZE LISTED, TYPICAL UNO.
7. HARDWARE SUPPLIER OTHER THAN SIMPSON SHALL SUBMIT A COMPARATIVE MATERIAL LIST ITEMIZING PRODUCT DESIGNATION, LOAD RATING, AND SUPPORTED MEMBER SIZE FOR REVIEW BY THE ENFORCEMENT AGENCY AND THE STRUCTURAL ENGINEER.

POST-INSTALLED ANCHORS

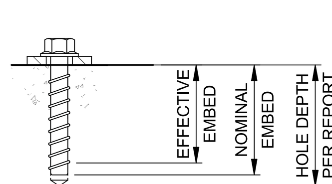
305SN001

1. FOR CONCRETE CONSTRUCTION, POST-INSTALLED ANCHORS SHALL BE ONE OF THE FOLLOWING:
   A. ADHESIVE ANCHORS FOR THRD ROD & REBAR:
      a. HILTI HIT-HY 200 V3 PER ESR-4868
      b. HILTI HIT-RE500 V3 PER ESR-3814
      c. SIMPSON SET-XP PER ESR-2508
      d. SIMPSON SET-3G PER ESR-4057
      e. DEWALT PURE 110+ ESR-3298
   B. EXPANSION ANCHORS:
      a. HILTI KB-TZ2 PER ESR-4266
      b. SIMPSON STRONG BOLT 2 PER ESR-3037
      c. DEWALT POWER-STUD+ SD2, SD4 OR SD6 AS NOTED PER ESR-2502
   C. SCREW ANCHORS:
      a. HILTI KWIK HUS-EZ (KH-EZ) PER ESR-3027
      b. SIMPSON TITEN HD PER ESR-2713
      c. DEWALT SCREWBOLT+ PER ESR-3889
2. FOR GROUT-FILLED MASONRY CONSTRUCTION, POST-INSTALLED ANCHORS SHALL BE ONE OF THE FOLLOWING:
   A. ADHESIVE ANCHORS FOR THRD ROD & REBAR:
      a. HILTI HIT-HY 270 PER ESR-4143
      b. SIMPSON SET-XP PER IAPMO UES ER-265
      c. DEWALT AC 100+ GOLD PER ESR-3200
   B. EXPANSION ANCHORS:
      a. HILTI KB-TZ2 PER ESR-4561
      b. SIMPSON STRONG-BOLT 2 PER IAPMO ER-240
      c. DEWALT POWER-STUD+ SD1 PER ESR-2966
   C. SCREW ANCHORS:
      a. HILTI KWIK HUS-EZ (KH-EZ) PER ESR-3056
      b. SIMPSON TITEN HD PER ESR-1056
      c. DEWALT SCREWBOLT+ PER ESR-4042
3. FOR UNREINFORCED MASONRY CONSTRUCTION, ADHESIVE ANCHORS SHALL BE ONE OF THE FOLLOWING:
   a. HILTI HY-270 PER ESR-4144
   b. SIMPSON ET-HD PER ESR-3630
   c. DEWALT AC100+ GOLD PER ESR-4105
4. PLASTIC MESH SCREEN TUBES SHALL BE PROVIDED AND EXISTING WALL THICKNESS AND MORTAR SHEAR STRENGTH SHALL MEET THE REQUIREMENTS OF THE EVALUATION REPORT.
5. ANCHOR TYPE, SIZE & EMBEDMENT SHALL BE AS INDICATED IN DRAWINGS. POST-INSTALLED ANCHORS FOR REPAIR SHALL BE EVALUATED ON A CASE BY CASE BASIS. NOTIFY STRUCTURAL ENGINEER FOR REPAIRS.
6. ALL EMBEDMENT DEPTHS CALLED OUT IN DRAWINGS REFER TO EFFECTIVE EMBEDMENT UNLESS OTHERWISE NOTED. SEE DIAGRAM BELOW AND ICC REPORTS.
7. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN THE EVALUATION REPORT. PROVIDE MINIMUM EMBEDMENT PROVIDED IN ICC ESR REPORT UNLESS NOTED OTHERWISE.
8. PROVIDE SPECIAL INSPECTION AS INDICATED IN THE STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING AND THE EVALUATION REPORT.
9. WHEN INSTALLING POST-INSTALLED ANCHORS IN EXISTING CONCRETE OR MASONRY, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING BARS. DO NOT INSTALL ANCHORS WITHIN 1 1/2" OF CMU HEAD JOINTS. DO NOT INSTALL ANCHORS IN PRESTRESSED CONCRETE ELEMENTS.
10. ANCHORS INSTALLED FROM THE BOTTOM INTO METAL DECK WITH CONCRETE SHALL BE INSTALLED IN THE CENTER OF THE LOW FLUTE OF THE DECKING UNLESS NOTED OTHERWISE IN EVALUATION REPORT. THE DECKING SHALL HAVE A MINIMUM THICKNESS OF 20 GAUGE. THE MINIMUM THICKNESS OF THE CONCRETE ABOVE THE HIGH FLUTE OF THE METAL DECK SHALL BE AS INDICATED IN THE EVALUATION REPORT. SEE EVALUATION REPORT FOR ADDITIONAL REQUIREMENTS, INCLUDING MINIMUM DIMENSIONS FOR FLUTE WIDTH AND DEPTH.
11. THE CONCRETE SHALL HAVE ATTAINED ITS MINIMUM DESIGN STRENGTH PRIOR TO INSTALLATION OF THE ANCHORS.
12. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT THE TIME OF ANCHOR INSTALLATION PER ACI 318, CHAPTER 17.
13. INSTALLER CERTIFICATION AND INSPECTION IS REQUIRED FOR HORIZONTAL AND UPWARDLY INCLINED ADHESIVE ANCHORS SUBJECTED TO SUSTAINED TENSION LOADING IN ACCORDANCE WITH ACI 318, CHAPTER 17.
14. IF TEMPERATURE OF BASE MATERIAL AT TIME OF ADHESIVE ANCHOR INSTALLATION IS 45 DEGREES FARENHEIT OR LOWER, AN "ACRYLIC" OR COLD WEATHER ADHESIVE IS REQUIRED. USE DEWALT AC200+, SIMPSON AT-XP, OR HILTI HIT-HY200 WHEN THIS OCCURS.
15. THE INSPECTION OF THE ANCHORS SHALL BE DONE BY A QUALIFIED INSPECTION AGENCY AND A REPORT OF THE INSPECTION RESULTS SHALL BE SUBMITTED TO THE GOVERNING AGENCY AND ARCHITECT/STRUCTURAL ENGINEER.

INSTALLED ANCHOR DIAGRAMS



EXPANSION ANCHOR



SCREW ANCHOR

ABBREVIATIONS

100SN003

(A) -	OCCURS ABOVE	JH -	JOIST HANGER
AB -	ANCHOR BOLT	LL -	LIVE LOAD
ABV -	ABOVE	LLH -	LONG LEG HORIZONTAL
ADDL -	ADDITIONAL	LLV -	LONG LEG VERTICAL
AHU -	AIR HANDLING UNIT	LONGIT -	LONGITUDINAL
ALT -	ALTERNATE	LS -	LAG SCREW
APPROX -	APPROXIMATE	LW -	LIGHTWEIGHT
ARCH -	ARCHITECTURAL	MECH -	MECHANICAL
(B) -	OCCURS BELOW	MFR -	MANUFACTURER
BLDG -	BUILDING	MI -	MALLEABLE IRON
BLKG -	BLOCKING	× -	MARK
BLW -	BELOW	MTL -	METAL
BM -	BEAM	(N) -	NEW
B.O. -	BOTTOM OF	NIC -	NOT IN CONTRACT
BOF -	BOTTOM OF FOOTING	NS -	NEAR SIDE
BOTT -	BOTTOM	NTS -	NOT TO SCALE
BRCG -	BRACING	NW -	NORMAL WEIGHT
BRG -	BEARING	O/ -	OVER
BTWN -	BETWEEN	OH -	OPPOSITE HAND
BYND -	BEYOND	OPNG -	OPENING
CC -	CENTER TO CENTER	OSB -	ORIENTED STRAND BOARD
CG -	CENTER OF GRAVITY	PC -	PIECE
CJ -	CONSTRUCTION JOINT	PERP -	PERPENDICULAR
CJP -	COMPLETE JOINT PENETRATION	PJP -	PARTIAL JOINT PENETRATION
CL -	CENTERLINE	PL -	PLATE
CLG -	CEILING	PT -	PRESSURE TREATED
CLR -	CLEAR	PW -	PUDDLE WELD
CMU -	CONCRETE MASONRY UNIT	REINF -	REINFORCING OR REINFORCEMENT
COL -	COLUMN	REQD -	REQUIRED
CONC -	CONCRETE	RWD -	REDWOOD
CONN -	CONNECTION	SC -	SLIP CRITICAL
CONT -	CONTINUOUS	SCH -	SCHEDULE
CONTR -	CONTRACTOR	SEOR -	STRUCTURAL ENGINEER OF RECORD
COORD -	COORDINATE	SHTG -	SHEATHING
CSK -	COUNTERSINK	SIM -	SIMILAR
DBL -	DOUBLE	SJ -	SLAB CONTROL JOINT
DF -	DOUGLAS FIR	SMS -	SHEET METAL SCREW
DIAG -	DIAGONAL	SOG -	SLAB-ON-GRADE
DL -	DEAD LOAD	SP -	STRUCTURAL PANEL
DWG -	DRAWING	SPCG -	SPACING
(E) -	EXISTING	SQ -	SQUARE
EA -	EACH	STD -	STANDARD
EF -	EACH FACE OR EDGE FASTENER	STFNR -	STIFFENER
EJ -	EXPANSION JOINT	STGRD -	STAGGERED
ELEV -	ELEVATION	STL -	STEEL
EN -	EDGE NAILING	STRUCT -	STRUCTURAL
EOS -	EDGE OF SLAB	SW -	SHEAR WALL
EQ -	EQUAL	T&B -	TOP & BOTTOM
EW -	EACH WAY	T&G -	TONGUE & GROOVE
FB -	FACE OF BLOCK/BRICK OR FLAT BAR	THRD -	THREADED
FC -	FACE OF CONCRETE	TN -	TOE NAIL
FDN -	FOUNDATION	T.O. -	TOP OF
FF -	FINISH FLOOR	TOC -	TOP OF CONCRETE (SLAB UNO)
FRMG -	FRAMING	TOF -	TOP OF FOOTING OR TOP OF FRAMING
FRT -	FIRE RETARDANT TREATED	TOS -	TOP OF STEEL
FS -	FACE OF STUD OR FAR SIDE	TOW -	TOP OF WALL
FTG -	FOOTING	TRANS -	TRANSVERSE
GA -	GAUGE OR GAGE	TYP -	TYPICAL
GALV -	GALVANIZED	UNO -	UNLESS NOTED OTHERWISE
GLB -	GLUED LAMINATED BEAM	VERT -	VERTICAL
GR -	GRADE	VIF -	VERIFY IN FIELD
GYP -	GYPSUM	WF -	WIDE FLANGE
HD -	HOLDOWN	WHS -	WELDED HEADED STUD
HDR -	HEADER	WP -	WORK POINT
HGR -	HANGER	WS -	WOOD SCREW
HK -	HOOK	WWF -	WELDED WIRE FABRIC
HORIZ -	HORIZONTAL	XS -	EXTRA STRONG
HSB -	HIGH STRENGTH BOLT	XXS -	DOUBLE EXTRA STRONG
HSS -	HOLLOW STRUCTURAL SECTION	Ø -	ROUND OR DIAMETER
HT -	HEIGHT		

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Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

Drawing Title
GENERAL NOTES

NO.	DATE	ISSUE

Drawn By -
Checked By -
Project No. 23-525
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STRUCTURAL SPECIAL INSPECTIONS AND TESTING

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING
1105N001

1. SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED BY A TESTING AND INSPECTION AGENCY, EMPLOYED BY THE OWNER (OR OWNER'S AUTHORIZED AGENT), AND APPROVED BY THE BUILDING OFFICIAL TO PROVIDE SPECIAL INSPECTIONS AND TESTING FOR THE PARTICULAR TYPE OF CONSTRUCTION.
2. TABLES OF SPECIAL INSPECTIONS AND TESTING ARE DERIVED FROM THE STRUCTURAL PROVISIONS OF THE CBC AND REFERENCED STANDARDS AND ARE FOR REFERENCE ONLY. THE INCLUDED TABLES ARE PROVIDED FOR THE CONVENIENCE OF THE OWNER, TESTING AGENCY AND CONTRACTOR IN DEVELOPING THE SCOPE OF WORK FOR REQUIRED TESTING AND INSPECTION OF STRUCTURAL MATERIALS AND COMPONENTS. FINAL DEFINITION OF THIS SCOPE OF WORK IS TO BE DETERMINED BY THE TESTING AGENCY AND THE OWNER (OR OWNER'S AUTHORIZED AGENT).
3. FREQUENCY OF SPECIAL INSPECTIONS AND TESTING SHALL BE, AT A MINIMUM, AS NOTED FOR THE INDIVIDUAL ELEMENTS WITHIN THE TABLES BELOW. THE CONTRACTOR SHALL COORDINATE TIMING OF SPECIAL INSPECTIONS AND TESTING WITH THE SPECIAL INSPECTION AND TESTING AGENCY.
4. PRIOR TO THE START OF CONSTRUCTION, THE TESTING AND INSPECTION AGENCY SHALL PROVIDE DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION, IN ACCORDANCE WITH CBC SECTION 1704.2.1.
5. THE TESTING AND INSPECTION AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER OF RECORD AND THE CONTRACTOR, PER CBC SECTION 1704.2.4. THE REPORTS SHALL INDICATE WHETHER WORK INSPECTED OR TESTED CONFORMED TO THE APPROVED CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.
6. SPECIAL INSPECTION AND TESTING RECORDS SHALL BE RETAINED BY THE CONTRACTOR ON SITE UNTIL COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT TO THE BUILDING OFFICIAL ACKNOWLEDGING RESPONSIBILITY FOR CONSTRUCTION OF THE MAIN LATERAL-FORCE RESISTING SYSTEM PRIOR TO COMMENCEMENT OF THAT WORK AS REQUIRED BY CBC SECTION 1704.4.
8. THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL SUBMIT TO THE BUILDING OFFICIAL, A FINAL REPORT DOCUMENTING SPECIAL INSPECTIONS AND TESTS PER CBC SECTION 1704.2.4, AND REPORTS AND CERTIFICATES PER CBC SECTION 1704.5.
9. ALL SOILS AND FOUNDATION EXCAVATION INSPECTIONS SHALL BE BY THE GEOTECHNICAL ENGINEER OF RECORD, OR A GEOTECHNICAL FIRM HIRED BY THE OWNER PER CBC SECTION 1705.6.
10. SPECIAL INSPECTION IS REQUIRED FOR ALL SHOP FABRICATED MEMBERS OR ASSEMBLIES UNLESS WAIVED PER THE EXCEPTIONS IN CBC SECTION 1704.2.5.
11. DEFINITIONS:
    a. CONTINUOUS - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS CONTINUOUSLY PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
    b. PERIODIC - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED.
    c. QUALITY ASSURANCE (QA) - MONITORING AND INSPECTION TASKS PERFORMED BY AN AGENCY OR FIRM OTHER THAN THE FABRICATOR OR ERECTOR TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED BY THE FABRICATOR AND ERECTOR MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. QUALITY ASSURANCE INCLUDES THOSE TASKS DESIGNATED 'SPECIAL INSPECTION' BY THE APPLICABLE CODE.
    d. QUALITY CONTROL (QC) - CONTROLS AND INSPECTIONS IMPLEMENTED BY THE FABRICATOR OR ERECTOR, AS APPLICABLE, TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
    e. OBSERVE (O) - OBSERVE THESE ITEMS ON A RANDOM BASIS (DAILY FOR LFRS). OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
    f. PERFORM (P) - PERFORM THOSE TASKS PRIOR TO FINAL ACCEPTANCE FOR EACH ITEM OR ELEMENT.
    g. DOCUMENT (D) - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE REPORT NEED NOT PROVIDE DETAILED MEASUREMENTS FOR JOINT FIT-UP, WPS SETTINGS, COMPLETED WELDS, OR OTHER INDIVIDUAL ITEMS LISTED IN THE TABLES. FOR SHOP FABRICATION, THE REPORT SHALL INDICATE THE PIECE MARK OF THE PIECE INSPECTED. FOR FIELD WORK, THE REPORT SHALL INDICATE THE REFERENCE GRID LINES AND FLOOR OR ELEVATION INSPECTED. WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND WHETHER THE NONCOMPLIANCE HAS BEEN SATISFACTORILY REPAIRED SHALL BE NOTED IN THE INSPECTION REPORT.
12. SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION ON THE WORK SHOWN IN THE CONSTRUCTION DOCUMENTS AS REQUIRED BY CBC CHAPTER 17, THE TABLES LISTED BELOW, AND THE JURISDICTION'S SPECIAL INSPECTION AND TESTING FORM. IF DISCREPANCIES ARE NOTED, CONTACT THE SEOR. ALL EXCEPTIONS INCLUDED IN CBC CHAPTER 17 ARE PERMITTED TO BE USED.
    - CONCRETE CONSTRUCTION (POST-INSTALLED ANCHORS)

CONCRETE CONSTRUCTION - POST-INSTALLED ANCHORS
REQUIRED SPECIAL INSPECTIONS AND TESTS
CBC TABLE 1705.3
1105N002

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD
1. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. [a,b]			ACI 318: 17.8.2.4, 17.8.2
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	-	
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 1.A.	-	X	

A. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO COMMENCEMENT OF THE WORK.

B. SEE THE POST-INSTALLED ANCHOR NOTES FOR ADDITIONAL INFO.

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Drawing Title
STRUCTURAL SPECIAL INSPECTIONS AND TESTING

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A S1.0.1 EQUIPMENT SCHEDULE

ID	DESCRIPTION	WT (LBS)	ANCHORAGE DETAIL	COMMENTS
HP-1	HEAT PUMP UNIT	1030#	8/S5.0.1	EXTERIOR, ROOF MOUNTED
HP-2	HEAT PUMP UNIT	900#	8/S5.0.1	EXTERIOR, ROOF MOUNTED
CU-1	CONDENSING UNIT	150#	11/M0.0.2	EXTERIOR, ROOF MOUNTED
CC-1	COOLING COIL UNIT	75#	5/M0.0.2	INTERIOR, FLOOR MOUNTED
F-1	FURNACE UNIT	150#	11/M0.0.2	INTERIOR, FLOOR MOUNTED
EP-1	ELECTRICAL PANEL	250#	5/E0.0.2	INTERIOR, WALL MOUNTED
(E) RTU-1	EXISTING ROOF TOP UNIT	?	-	EXTERIOR, ROOF MOUNTED
(E) RTU-2	EXISTING ROOF TOP UNIT	?	-	EXTERIOR, ROOF MOUNTED
(E) RTU-3	EXISTING ROOF TOP UNIT	?	-	EXTERIOR, ROOF MOUNTED
(E) RTU-4	EXISTING ROOF TOP UNIT	?	-	EXTERIOR, ROOF MOUNTED



FOUNDATION PLAN 1/8" = 1'-0"

FOUNDATION PLAN NOTES

1. NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS, UNO.
2. CONTRACTOR TO NOTIFY ARCHITECT IF EXISTING DAMAGE OR DETERIORATION OF EXISTING STRUCTURE IS ENCOUNTERED
3. ALL ITEMS ARE EXISTING UNLESS SHOWN OTHERWISE AS NEW

FOUNDATION LEGEND

(N) MECHANICAL UNIT. SEE MECHANICAL UNIT SCHEDULE **A/S1.0.1** FOR WEIGHTS AND ATTACHMENT OF UNIT TO STRUCTURE.

XX / X / XX#

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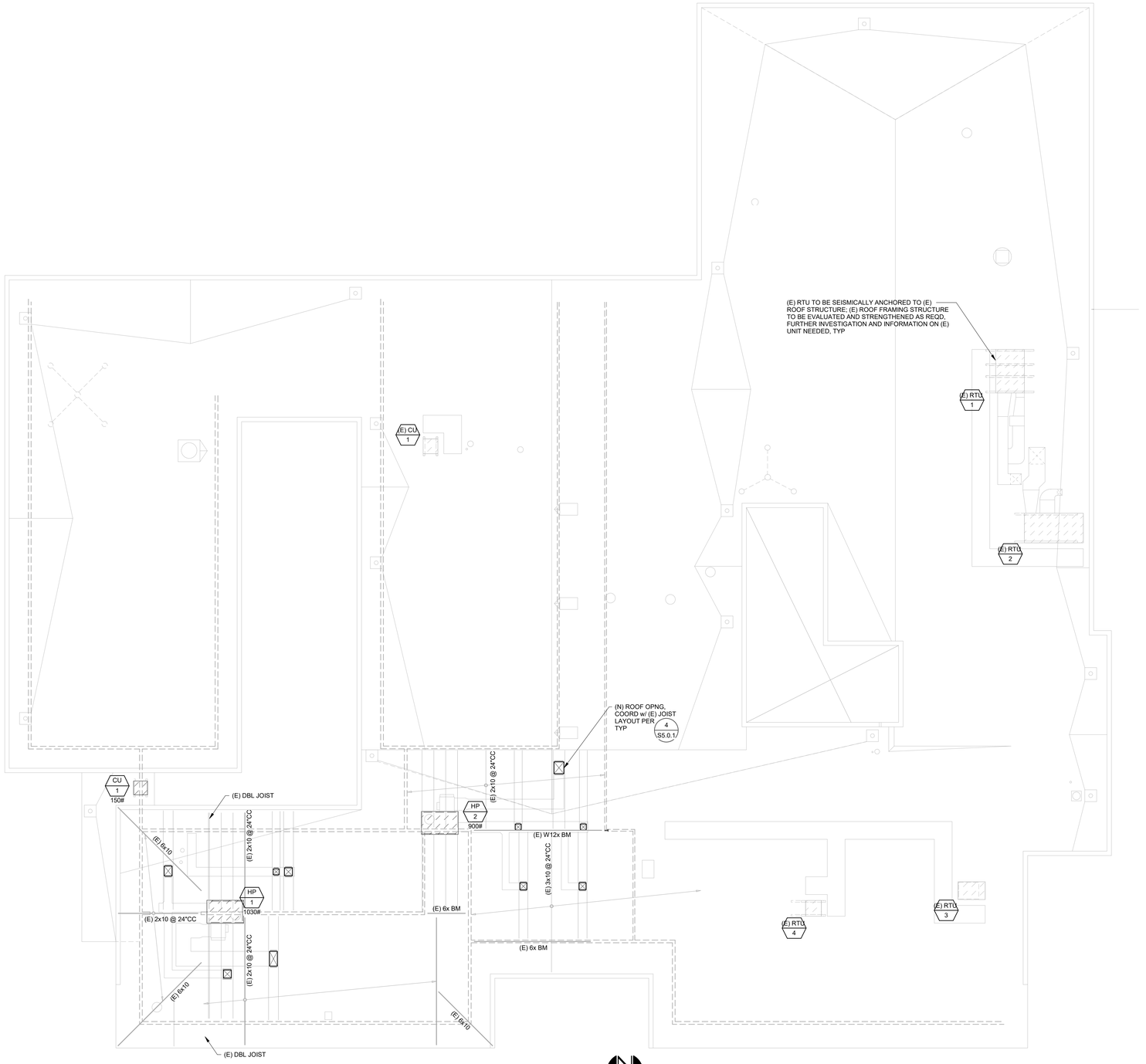
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ROOF FRAMING PLAN

1/8" = 1'-0"

FRAMING PLAN NOTES

1. NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS, UNO.
2. CONTRACTOR TO NOTIFY ARCHITECT IF EXISTING DAMAGE OR DETERIORATION OF EXISTING STRUCTURE IS ENCOUNTERED
3. ALL ITEMS ARE EXISTING UNLESS SHOWN OTHERWISE AS NEW
4.
5. FOR EQUIPMENT SCHEDULE, SEE **A/S1.0.1** .

FRAMING LEGEND

(N) MECHANICAL UNIT. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT FOR SIZE & LOCATION WITH OTHER TRADES & THE STRUCTURAL DRAWINGS. UNIT SIZES & LOCATIONS SHOWN ARE APPROXIMATE.

XX
X
XX#

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ROOF FRAMING PLAN

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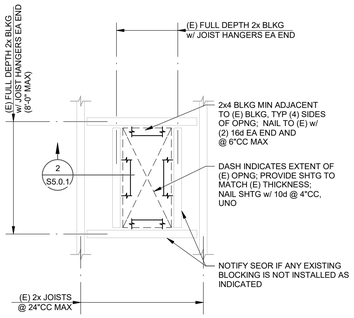
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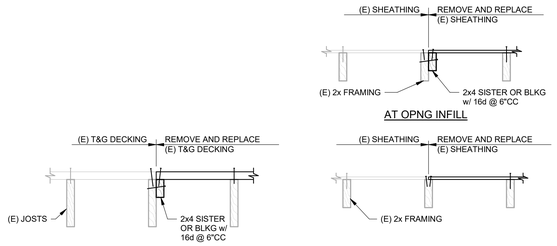
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PLAN

DETAIL 1 S5.0.1 NO SCALE

OPENING INFILL



AT OPNG INFILL

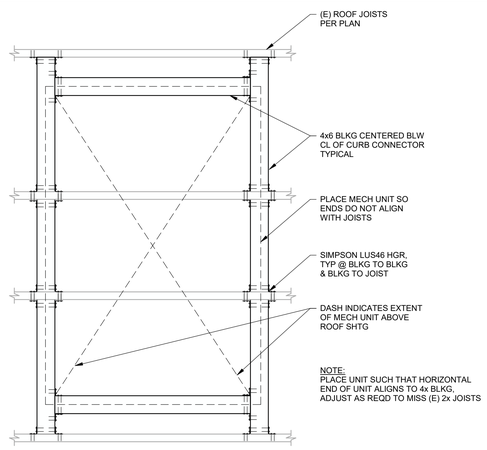
AT DECKING & BOARD SHEATHING

AT SHEATHING REPLACEMENT

NOTES:
1. REPLACE (E) DECKING AND SHEATHING AS SHOWN ON PLAN AND WHERE DRY ROT CONDITIONS ARE DISCOVERED IN THE FIELD. REMOVE (E) MATERIAL WITHOUT CUTTING OR OTHERWISE DAMAGING (E) SUPPORT FRAMING.
2. NAIL T&G DECKING AS FOLLOWS: NAIL 2x6 BOARDS w/ (2) 16d EA BEARING.
3. REPLACE (E) SHEATHING AS SHOWN ON ARCH DRAWINGS AND WHERE DAMAGE IS DISCOVERED IN FIELD.
4. SHEATHING SHALL MATCH EXISTING IN GRADE, THICKNESS AND NAILING. MINIMUM REQUIREMENTS ARE 1/2" 5 PLY CD-X SHEATHING w/ 8d @ 6"CC AT PANEL EDGES, AND 8d @ 12"CC IN FIELD.

DETAIL 2 S5.0.1 NO SCALE

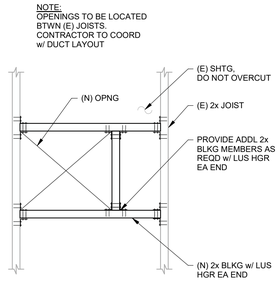
SHEATHING REPLACEMENT & INFILL



NOTE:
PLACE UNIT SUCH THAT HORIZONTAL END OF UNIT ALIGNS TO 4x BLKG, ADJUST AS REQD TO MISS (E) 2x JOISTS

PLAN

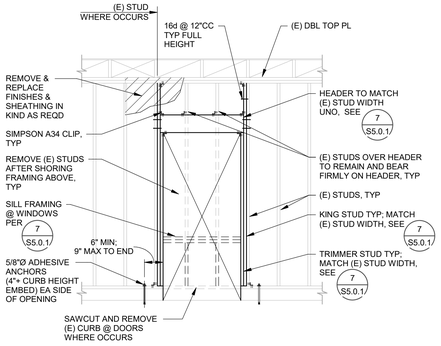
DETAIL 3 S5.0.1 NO SCALE



PLAN

DETAIL 4 S5.0.1 NO SCALE

OPENING IN FLOOR OR ROOF

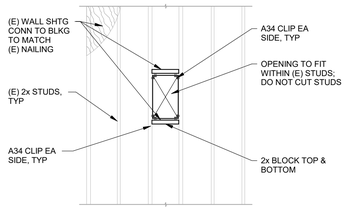


DETAIL 5 S5.0.1 NO SCALE

OPENING AT (E) INTERIOR STUD WALL

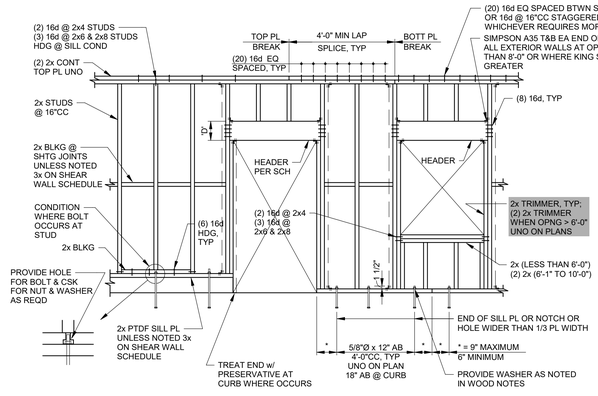
HEADER SCHEDULE	
WIDTH OF OPENING	NOMINAL HEADER DEPTH 'D'
0 TO 4'-0"	8"
4'-1" TO 6'-0"	10"
TYP UNO ON PLAN OR IN PLAN NOTES	

NOTES:
1. HEADER SHALL BE FULL WIDTH OF STUD WALL.
2. AT OPENINGS FOR MECH DUCTS, SEE **S/S5.0.1**.



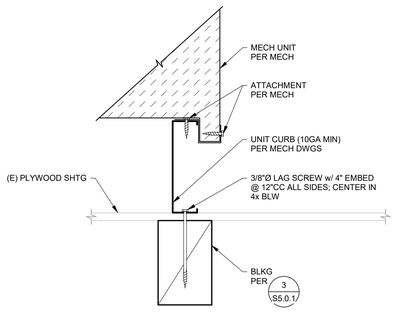
DETAIL 6 S5.0.1 NO SCALE

OPENING BETWEEN (E) STUDS



DETAIL 7 S5.0.1 NO SCALE

STRUCTURAL WALL FRAMING



DETAIL 8 S5.0.1 NO SCALE

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ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

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DETAILS

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S5.0.1

FURNACE UNIT (GAS) SCHEDULE

TYPE	MARK	NOM. TONS	UNIT ORIENT –ATION	ELECTRICAL					SUPPLY FAN				OSA	HEATING (NATURAL GAS)				FILTER TYPE	OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
				VOLTS	PHASE	FLA	MCA	MOCP	MOTOR BHP	DRIVE	CFM	E.S.P. (IN WC)	MIN CFM	AFUE (%)	INPUT (MBH)	OUTPUT (MBH)	AMBIENT DB (°F)				
F	1	2	VERTICAL	115	1	8.8	14.2	15	3/4	BELT	872	0.8	SEE SCHED.	80	60	48	30	MERV–13	150	CARRIER	58SU0B060M17–16

NOTES:
1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
2. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.

CONDENSING UNIT (SPLIT DX) SCHEDULE

TYPE	MARK	NOM. TONS	ELECTRICAL					COOLING (DX)				OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
			VOLTS	PHASE	RLA	MCA	MOCP	SEER/ EER	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	AMBIENT DB (°F)			
CU	1	2	208	1	10.9	14.2	20	15.2/ 12.5	22.3	17.85	105	150	CARRIER	24SCA524W003

NOTES:
1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
2. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.

COOLING COIL (SPLIT DX) SCHEDULE

TYPE	MARK	NOM. TONS	COIL ORIENTATION	SUPPLY AIR CFM	COOLING (DX)			OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
					TOTAL CAP. (MBH)	SENS. CAP. (MBH)	E.A. DB/WB (°F)			
CC	1	2	VERTICAL	800	22.3	17.85	80/67	125	CARRIER	CAPMP2417ALA

NOTES:
1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
2. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.

AIR DISTRIBUTION SCHEDULE

SYMBOL	TYPE	DESCRIPTION
C	SURFACE CEILING SUPPLY	STEEL MODULAR CORE SQUARE CEILING DIFFUSER WITH ADJUSTABLE DISCHARGE PATTERN. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS MCD.
D	SURFACE CEILING RETURN/ TRANSFER	STEEL LOUVERED RETURN GRILLE WITH HORIZONTAL BLADES AT 3/4" SPACING AND 35° DEFLECTION. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 350RL.
E	SURFACE CEILING EXHAUST	ALUMINUM EGGCRATE RETURN GRILLE WITH 1/2"x1/2"x1/2" GRID. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 50F.
F	SIDEWALL SUPPLY	STEEL LOUVERED SUPPLY GRILLE WITH DOUBLE DEFLECTION AND INDIVIDUALLY ADJUSTABLE BLADES AT 3/4" SPACING. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 300RL.
G	SIDEWALL RETURN/ TRANSFER	STEEL LOUVERED RETURN GRILLE WITH HORIZONTAL BLADES AT 3/4" SPACING AND 35° DEFLECTION. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 350RL.

NOTES:
1. REFER TO MECHANICAL PLANS FOR NECK SIZE, CFM, AIR DIFFUSION PATTER, AND FIRE DAMPER WHERE APPLICABLE.

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7–16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7–16 SECTION 13.3 AS DEFINED IN ASCE 7–16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24 THROUGH 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE–APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☒ ☒ ☐ ☐ SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE–APPROVAL
☐ ☐ ☐ ☐ (OPM#) #0043–13.

OUTSIDE AIR SCHEDULE

SYSTEM NAME	MIN. OSA CFM	MAX. OSA CFM	DEMAND CONTROL VENT. (Y/N)
F–1	150	–	–
HP–1	340	–	–
HP–2	315	–	–

* OSA TO BE PER TITLE 24, 2019 BUILDING ENERGY EFFICIENY STANDARDS, SECTION 120.1, REQUIREMENTS.

* DEMAND VENTILATION CONTROLS SHALL MAINTAIN CO2 CONCENTRATIONS LESS THAN OR EQUAL TO 600 PPM PLUS THE OUTDOOR AIR CO2 CONCENTRATIONS IN ALL ROOMS WITH CO2 SENSORS.

MECHANICAL LEGEND

SYMBOL	ITEM	ABBR.
	SUPPLY AIR	SA
	RETURN AIR	RA
	EXHAUST AIR	EA
	OUTSIDE AIR	OSA
	TRANSFER AIR	TA
1 / M–1	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
AC–1	EQUIPMENT DESIGNATION UNIT ABBREVIATION NUMBER	
A 10x10–1 120 FD	GRILLE DESIGNATION NECK SIZE & BLOW (4 UON) FIRE DAMPER WHERE REQ'D CFM	
	ACOUSTIC LINED DUCT	L
	TURNING VANES	TV
	DUCT FLEXIBLE CONNECTION	
	DUCT RISER	
	DUCT DROP	
	RECTANGULAR TO ROUND FITTING	
	VOLUME CONTROL DAMPER	VD
FD	FIRE DAMPER W/ ACCESS	FD
FSD	FIRE SMOKE DAMPER W/ ACCESS	FSD
	OPPOSED BLADE DAMPER	OBD
	BACKDRAFT DAMPER	BDD
M	MOTORIZED DAMPER	
T	THERMOSTAT @ +48" AFF	T–STAT
S	SENSOR @ +48" AFF	
TC	TIMECLOCK @ +48" AFF	
TCP	TEMPERATURE CONTROL PANEL	TCP
SD	DUCT SMOKE DETECTOR	SD
	PIPE RISER/DROP	(R)/(D)
	ABOVE FINISHED FLOOR	AFF
	UNLESS OTHERWISE NOTED	UON
	TYPICAL	(TYP)
	BOTTOM OF DUCT	BOD
	BOTTOM OF PIPE	BOP
	AUTOMATIC AIR VENT	AAV
	MANUAL AIR VENT	MAV
	TEMP. CONTROL CONTRACTOR	TCC
	TEMPERATURE CONTROL VALVE	TCV
	COMBUSTION AIR	CA
	NEW	(N)
	EXISTING	(E)
POC	POINT OF DIS/CONNECTION	POD/POC
	HEATING HOT WATER SUPPLY	HHWS
	HEATING HOT WATER RETURN	HHWR
	2–WAY CONTROL VALVE	
	BACKFLOW PREVENTER	BFP
	BALL VALVE	
	BUTTERFLY VALVE	
	CAP	
	CHECK VALVE	
	AUTOMATIC BALANCE VALVE (B&G ULTRA SET)	ABV
	AUTOMATIC BALANCE VALVE (B&G CIRCUIT SETTER)	CBV
	CONTROL VALVE (2–WAY)	
	FLEX CONNECTOR	FC
	FLOW ARROW	
	GATE VALVE	
	PRESSURE GAUGE	
	PLUG VALVE	
	REDUCER	
	STRAINER	
TS	TEMPERATURE SENSOR	TS
	TEST PORT (PETE'S PLUG)	PP
	THERMOMETER	
	TRIPLE DUTY VALVE	

MECHANICAL SPECIFICATIONS

A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
- A.1. 2022 CALIFORNIA BUILDING CODE
- A.2. 2022 CALIFORNIA MECHANICAL CODE
- A.3. 2022 CALIFORNIA PLUMBING CODE
- A.4. 2022 CALIFORNIA ELECTRICAL CODE
- A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS
- A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS – TITLE 24
- A.7. NATIONAL FIRE PROTECTION ASSOCIATION
- A.8. CALIFORNIA STATE FIRE MARSHAL

B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.

C. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF MECHANICAL EQUIPMENT.

D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.

E. THE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.

F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, AIR FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.

G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.

H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS MECHANICAL CONTROL SYSTEM COMPONENTS, FIRE/SMOKE DAMPERS, SMOKE DETECTORS, ETC., OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.

I. CHECK ALL PIPE AND DUCTWORK FOR LEAKS AND EXCESSIVE AIR LOSS AND NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.

J. GALVANIZED STEEL DUCTS SHALL BE ASTM A 653/A 653M GALVANIZED STEEL SHEET, FORMING STEEL (FS) DESIGNATION, WITH G90/Z275 ZINC COATING.

K. FABRICATE, SUPPORT AND SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR 4" STATIC PRESSURE UPSTREAM OF TERMINAL UNITS (VAV, CAV BOXES) AND 2" STATIC PRESSURE DOWNSTREAM OF TERMINAL UNITS (VAV, CAV BOXES).

L. CONSTRUCT DUCTWORK T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1–1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION.

M. COMBINATION FIRE AND SMOKE DAMPERS SHALL MEET THE REQUIREMENTS OF NFPA 90A, UL 555, UL 555S, AND AS INDICATED. PROVIDE FACTORY SLEEVE AND COLLAR FOR EACH DAMPER.

N. ALL INSULATION AND LINER PRODUCTS SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, OR UL 723.

O. DUCT INSULATION BLANKET (INTERIOR APPLICATIONS):
- O.1. INSULATION: ASTM C553; FLEXIBLE, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DUCT APPLICATION: 2" THICK, 3/4 LB. DENSITY.
- O.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.02 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.

P. DUCT INSULATION BOARD (EXTERIOR APPLICATIONS):
- P.1. INSULATION: ASTM C 612; RIGID, NONCOMBUSTIBLE BLANKET. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F (0.036 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DENSITY: 3.0 LB/CU FT (48 KG/CU M).
- P.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96; 0.04 PERM. SECURE WITH PRESSURE SENSITIVE TAPE.
- P.3. ALUMINUM JACKET: ASTM B 209 (ASTM B 209M). THICKNESS: 0.016 INCH (0.40 MM) SHEET. FINISH: SMOOTH. JOINING: LONGITUDINAL SLIP JOINTS AND 2 INCH (50 MM) LAPS. FITTINGS: 0.016 INCH (0.4 MM) THICK DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER. METAL JACKET BANDS: 3/8 INCH (10 MM) WIDE, 0.015 INCH (0.38 MM) THICK ALUMINUM.

Q. DUCT LINER:
- Q.1. INSULATION: INCOMBUSTIBLE GLASS FIBER COMPLYING WITH ASTM C 1071; FLEXIBLE BLANKET; WITH ACRYLIC POLYMER SHOWN TO BE FUNGUS AND BACTERIA RESISTANT BY TESTING TO ASTM G 21 IMPREGNATED SURFACE AND EDGE COAT. APPARENT THERMAL CONDUCTIVITY: MAXIMUM OF 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C). DUCT APPLICATION: 1–1/2" THICK, 1–1/2 POUND DENSITY. SERVICE TEMPERATURE: UP TO 250 DEGREES F (121 DEGREES C). RATED VELOCITY ON COATED AIR SIDE FOR AIR EROSION: 5,000 FPM (25.4 M/S), MINIMUM.
- Q.2. LINER FASTENERS: GALVANIZED STEEL, SHEET METAL WELD PINS OR CLINCH PINS AND WASHERS.

R. INSULATED FLEXIBLE DUCTS
- R.1. FLEXIBLE DUCTS SHALL BE U.L. LISTED AND SHALL COMPLY WITH UMC STANDARD 6–1.
- R.2. THE MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5 FEET PER CMC SECTION 603.4.1 DUCTWORK SHALL BE EXTENDED TO FULL LENGTH WHENEVER POSSIBLE WITHOUT SEVERE BENDS OR KINKS. BENDS SHALL BE MADE TO MAINTAIN R/W EQUAL TO 1.5.
- R.3. BLACK POLYMER FILM SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE; FIBERGLASS INSULATION; POLYETHYLENE VAPOR BARRIER FILM.
  - R.3.1. PRESSURE RATING: 4 INCHES WG POSITIVE PRESSURE AND 1 INCH NEGATIVE PRESSURE.
  - R.3.2. INSULATION SHALL BE 1–1/2 INCH THICK FIBERGLASS.
  - R.3.3. MAXIMUM VELOCITY: 4000 FPM (20.3 M/SEC).
  - R.3.4. TEMPERATURE RANGE: –20 DEGREES F TO 175 DEGREES F (–28 DEGREES C TO 79 DEGREES C).

S. SEAL ALL STANDING SEAMS AND TRANSVERSE JOINTS IN ALL SHEETMETAL DUCTWORK WITH HARDCAST IRON GRIP PREMIUM FLEXIBLE WATER BASED DUCT SEALANT.

T. DURING CONSTRUCTION PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.

U. ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS WITH ACCESSIBLE LOCKING TYPE QUADRANT. WHERE DAMPER IS INACCESSIBLE, PROVIDE YOUNG REGULATOR MODEL 270–301 CABLE KIT WITH EITHER 830A–CC (RECTANGULAR) OR 5020–CC (ROUND) DAMPER.

V. PERFORM TOTAL SYSTEMS BALANCE IN ACCORDANCE WITH AABC, ASHRAE STD 111, OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.

W. THE INSTALLATION OF DUCT SMOKE DETECTORS FOR AUTOMATIC SHUTDOWN OF AIR MOVING SYSTEMS AS REQUIRED BY CMC SECTION 609 OR AS REQUIRED FOR THE OPERATION OF FIRE SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT'S STANDARD "FIRE PROTECTION DESIGN GUIDELINES FOR SMOKE CONTROL WITHIN BUILDINGS". WHERE AIR DUCT SMOKE DETECTORS SERVING AIR–MOVING SYSTEMS ARE INSTALLED WITHIN CONDCEALED SPACES, AND/OR DROP CEILING AREAS, THE DETECOR SHALL BE PROVIDED WITH THE UNIT SERVED. SAID REMOTE ALARM LED DEVICE SHALL BE LABELED TO CLEARLY IDENTIFY THE UNIT SERVED (AC–1, ETC.). WHERE AIR DUCT SMOKE DETECTORS SERVING AIR–MOVING SYSTEMS ARE INSTALLED IN CONCEALED SPACES, AND/OR DROP CEILING AREAS MORE THAN 10 FEET ABOVE THE FINISHED FLOOR, THE DETECTOR SHALL BE PROVIDED WITH A REMOTE TEST AND RESET SWITCH, SAID REMOTE TEST AND RESET SWITCH SHALL BE ATTACHED TO AN ADJACENT WALL OR STRUCTURAL COLUMN AT A MAXIMUM HEIGHT OF 6 FEET ABOVE FINISHED FLOOR. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT–OFF TEST WILL BE REQUIRED.

PACKAGED HEAT PUMP UNIT (DX) SCHEDULE

TYPE	MARK	NOM. TONS	DUCT DISCHARGE	ELECTRICAL					SUPPLY FAN				OSA	COOLING (DX)				HEATING (DX)				POWERED EXHAUST						FILTER TYPE	OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
				VOLTS	PHASE	FLA	MCA	MOCP	MOTOR BHP	DRIVE	CFM	E.S.P. (IN WC)	MIN CFM	SEER/ EER	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	E.A. DB/WB (°F)	AMBIENT DB (°F)	HSPF/ COP	TOTAL CAP. (MBH)	AUX. HEAT (KW)	AMBIENT DB (°F)	VOLTS	PHASE	RLA	MCA	MOCP	MOTOR HP				
HP	1	4	HORIZONTAL	208	3	37	39	50	0.77	DIRECT	1600	0.8	SEE SCHED.	17/ –	47.15	34.83	80.0/ 67.0	105	8.7/ 3.7	33.5	3.3	30.0	208	3	2.2	2.75	4.95	0.5	CANFAB	1120–PE/MPE	MERV–13	1030	CARRIER	50GCQJ05A2M5–0A0A0
HP	2	3	HORIZONTAL	208	3	29	31	35	0.51	DIRECT	1200	0.8	SEE SCHED.	17/ –	35.12	26.67	80.0/ 67.0	105	8.8/ 3.8	24.4	3.3	30.0	208	3	2.2	2.75	4.95	0.5	CANFAB	1120–PE/MPE	MERV–13	900	CARRIER	50GCQJ05A2M5–0A0A0

NOTES:
1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
2. SEE ELECTRICAL DRAWINGS FOR POWERED EXHAUST DISCONNECT SWITCH.
3. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.
4. PROVIDE UNITS WITH: LOW AMBIENT KIT, CRANKCASE HEATER, HINGED ACCESS DOORS, LOUVERED CONDENSER COIL HAIL GUARDS, AND ANTI–SHORT CYCLE COMPRESSOR DELAY TIMER.
5. PROVIDE MERV 13 FILTERS.
6. PROVIDE CANFAB 14" HIGH ROOF CURB.
7. PROVIDE CANFAB MODULATING ULTRA LOW–LEAK 100% ECONOMIZER WITH FAULT DETECTION & DIAGNOSTICS (FDD), ADJUSTABLE DRY BULB CONTROL AND MODULATING CENTRIFUGAL 100% POWERED EXHAUST. POWERED EXHAUST TO BE SET TO MAINTAIN 0.03" W.C. SPACE PRESSURE. COORDINATE REQUIREMENTS WITH CONTROLS.
8. SEE CONTROLS DRAWINGS FOR CONTROLS INFORMATION.

MECHANICAL SHEET INDEX

SHEET NO.	SHEET TITLE
M0.0.1	MECHANICAL NOTES, LEGEND AND SCHEDULES
M0.0.2	MECHANICAL DETAILS
M1.0.0	MECHANICAL SITE PLAN
M1.0.1	MECHANICAL FLOOR PLAN
M2.0.1	MECHANICAL ROOF PLAN
M6.4.1D	MECHANICAL DEMO ENLARGED FLOOR PLAN
M6.4.1	MECHANICAL ENLARGED FLOOR PLAN

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HVAC & ROOF UPGRADES

Drawing Title
MECHANICAL NOTES, LEGEND, AND SCHEDULES

NO.	DATE	ISSUE

Drawn By
Checked By
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23-525
©Date
01/05/2024
Drawing No.
M0.0.1

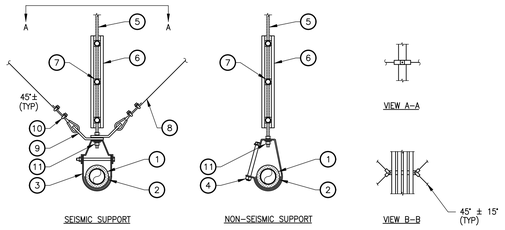
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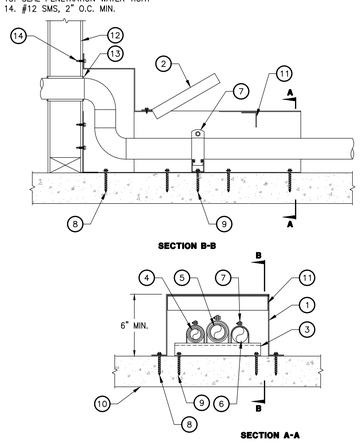
1. PIPE, SEE PLAN FOR SIZE AND ROUTING
2. PIPE INSULATION WHERE APPLICABLE, SEE SPECIFICATIONS. PROVIDE INSULATION PROTECTION SADDLE, MIN. 12" LONG, B-LINE B3151 OR EQUAL. MAY BE SUBSTITUTED FOR PRE-INSULATED CALCIUM SILICATE SHIELD SUPPORT, B-LINE B338 OR EQUAL.
3. STANDARD CLEVIS PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3100 OR EQUAL
4. ADJUSTABLE "J" PIPE HANGER, COATED OR PLATED TO ISOLATE HANGER FROM DISSIMILAR METAL PIPING, B-LINE B3690 OR EQUAL
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL
6. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL
7. ROD STIFFENER, B-LINE TOLCO MODEL 988 OR EQUAL, MIN. 1" FROM TOP AND BOTTOM OF UNISTRUT AND MAX. 28" O.C., TORQUE TO 10 FT-LBS
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE
9. 2"x3"x1/4" X 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL
10. CABLE THIMBLE AND CABLE CLIPS
11. NUT AND WASHER, TOP AND BOTTOM



NOTES:
A. HANGER SPACING TO BE PER SPECIFICATIONS. MAXIMUM SPACING MAY NOT EXCEED 2019 CPC TABLE 313.3.
B. PROVIDE ROD STIFFENERS ONLY WHERE ROD LENGTH FROM SEISMIC BRACING TO UPPER ATTACHMENT EXCEEDS 18".
C. SEISMIC RESTRAINTS ARE NOT REQUIRED FOR 3/4" AND SMALLER GAS PIPING, AND FOR ALL OTHER PIPING 2" AND SMALLER.
D. SEISMIC RESTRAINTS ARE NOT REQUIRED FOR ALL PIPING SUSPENDED BY INDIVIDUAL HANGERS 12" OR LESS IN LENGTH FROM TOP OF PIPE TO BOTTOM OF ATTACHMENT TO STRUCTURE.

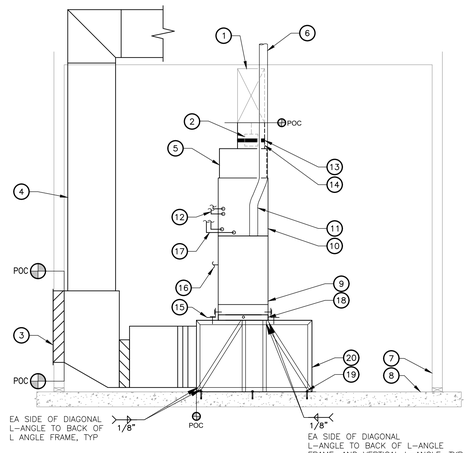
PIPE HANGER DETAIL | NTS | 9

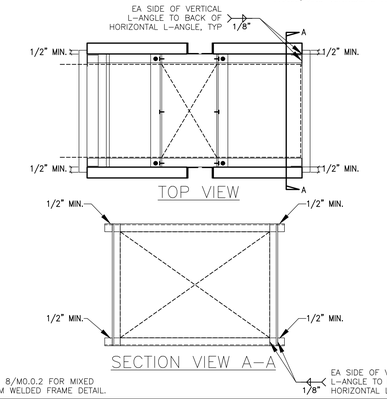
1. 14 GA GALVANIZED COVER PLATE ALL AROUND PIPING AND CONDUIT UP TO WALL PENETRATION
2. PROVIDE HINGED ACCESS IN GALVANIZED COVER PLATE FOR ANY CONCEALED ACCESSORIES (FILTER DRYER, SITE GLASS, ETC.)
3. UNISTRUT P1000 CHANNEL, 4'-0" O.C. MAX.
4. REFRIGERANT LIQUID LINE PER MFGR'S REQUIREMENTS, TYP.
5. REFRIGERANT SUCTION LINE PER MFGR'S REQUIREMENTS, TYP.
6. CONTROL AND ELECTRICAL CONDUIT BY OTHERS, COORDINATE SPACE REQUIREMENTS, TYP.
7. PIPE CLAMP WITH INSULATION SHIELD
8. "TAPCON" CONCRETE SCREW WITH 1" EMBED. AT 8" O.C.
9. "TAPCON" CONCRETE SCREW WITH 1" EMBED, (2) PER CHANNEL
10. CONCRETE PAD
11. 2" x 2" x 1/8" ANGLE WELDED TO UNDERSIDE IF WIDTH EXCEEDS 18"
12. EXTERIOR WALL
13. SEAL PENETRATION WATER TIGHT
14. #12 SMS, 2" O.C. MIN.



REFRIGERANT PIPE MOUNTING | NTS | 10

1. (E) 9X18" SUPPLY DUCT WORK
2. (E) DUCT SMOKE DETECTOR
3. (E) 42X24 OUTSIDE AIR WALL LOUVER
4. 18X16 RA FROM ROOF
5. 16X19 SA PLENUM
6. CONCENTRIC FLUE VENT UP THROUGH ROOF. USE (E) ROOF OPENING.
7. (E) WALL / PARTITION
8. (E) CONCRETE SLAB
9. FURNACE UNIT, SEE SCHEDULES.
10. COOLING COIL, SEE SCHEDULE.
11. FURNACE FLUE VENT, CONNECT TO CONCENTRIC VENT.
12. LIQUID AND REFRIGERANT LINES, ROUTE AND SIZE PER MFGR.
13. FLEXIBLE CONNECTION
14. 9X18 SUPPLY DUCT, CONNECT TO EXISTING SUPPLY.
15. 2-1/2"X6"X3/16" ANGLE TOP OF PLENUM, SECURE TO PLENUM AND TO FURNACE BASE WITH #12X3/4" SM SCREWS, PROTRUDE WITH MIN 3 THREADS. 2 TO THE FRAME AND 3 TO FURNACE MIN., EVENLY SPACED AND SEAL AIRTIGHT.
16. GAS LINE, SEE PLUMBING PLAN FOR SIZE AND ROUTING.
17. 3/4" PRIMARY AND SECONDARY CONDENSATE DRAIN. ROUTE TO EXISTING.
18. BOTTOM INLET FILTER BOX WITH MERV 13 FILTER.
19. 3/8" DIAMETER STAINLESS STEEL HILTI KB-TZ2 EXPANSION ANCHORS, 2-1/2" MIN. EMBEDMENT, TYP. 3 MIN BOLTS ON PER SIDE).
20. 33" HIGH x 29" DEEP FURNACE UNIT PLATFORM (BY GC) AND SHEET METAL MIXED AIR PLENUM. MINIMUM 26 GA SHEET METAL WITH 1" ACOUSTIC LINING ON THE INSIDE. SEE DETAIL 5/M0.0.2.

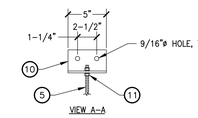


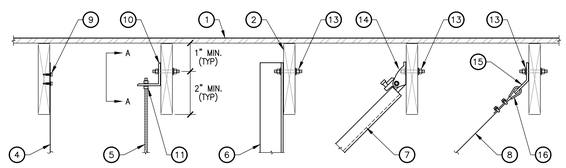


NOTE:
1. SEE DETAIL 8/M0.0.2 FOR MIXED AIR PLENUM WELDED FRAME DETAIL.

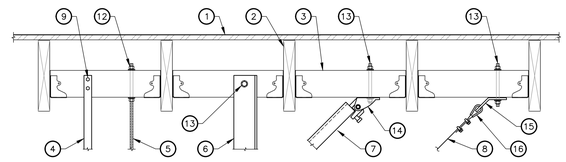
FURNACE / COOLING COIL MOUNTING | NTS | 7

1. FLOOR/ROOF, SEE STRUCTURAL DRAWINGS
2. FLOOR/ROOF FRAMING, SEE STRUCTURAL DRAWINGS
3. 4x4 BLOCKING BETWEEN JOISTS W/ U44 HANGERS AT EACH END, TYP.
4. 1" x 20 GA. GALV. SHEET METAL STRAP
5. 3/8"ø THREADED ROD, B-LINE ATR OR EQUAL
6. 3"x3"x1/4" GALVANIZED STEEL ANGLE
7. 1-5/8"x1-5/8"x12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL
8. 3/32"ø PRE-STRETCHED GALVANIZED AIRCRAFT CABLE, 7x19 STRAND CORE
9. (2) #12 x 1" SMS, 2" O.C. MIN.
10. 3"x3"x1/4" x 5" LONG GALVANIZED STEEL ANGLE, ATTACH TO FRAMING WITH (2) 1/2"ø BOLTS OR THREADED ROD WITH NUTS AND WASHER
11. NUT, TOP AND BOTTOM
12. NUT AND WASHER, TOP AND BOTTOM
13. 3/8"ø THREADED ROD THROUGH SUPPORT MEMBER WITH NUT AND WASHER EA END
14. UNIVERSAL SWAY BRACE UPPER ATTACHMENT, B-LINE TOLCO FIG. 980 OR EQUAL
15. 2"x3"x1/4" x 1-5/8" WIDE GALVANIZED STEEL ANGLE, B-LINE MODEL B154 OR EQUAL
16. CABLE THIMBLE AND CABLE CLIPS





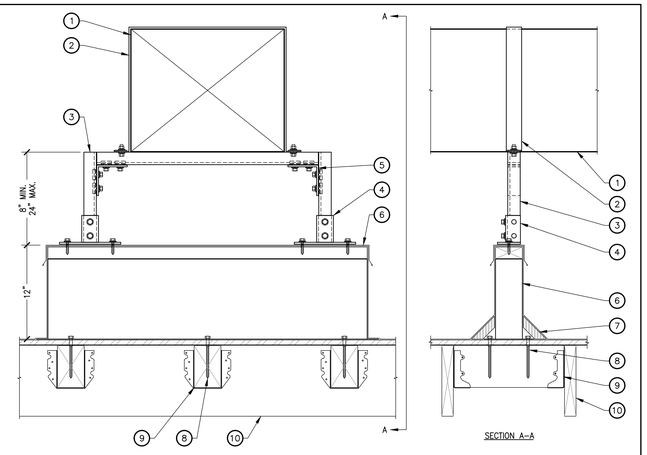
AT FRAMING MEMBERS



BETWEEN FRAMING MEMBERS

HANGER UPPER ATTACHMENTS (WOOD) | NTS | 1

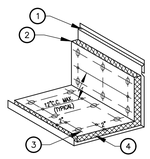
1. RECTANGULAR OR ROUND DUCT, SEE PLAN FOR SIZE
2. 2" WIDE X 18 GA. GALV. SHEET METAL STRAP, FOLD OVER ENDS, SECURE TO CHANNEL WITH 3/8"ø BOLTS WITH NUT AND WASHER AT EACH END
3. 1-5/8"X1-5/8"X12 GA UNISTRUT CHANNEL, B-LINE B22 OR EQUAL, TYP
4. CHANNEL POST BASE, B-LINE B280FL OR EQUAL, SECURE TO CURB WITH (2) 3/8"ø STAINLESS STEEL WOOD SCREWS WITH WASHER, MIN. 1" EMBED., SILICONE SEAL PENETRATION WATERTIGHT
5. 4-HOLE CORNER ANGLE, B-LINE B115 OR EQUAL, SECURE TO UNISTRUT CHANNEL WITH (4) 3/8"ø BOLTS WITH CHANNEL NUTS, TYP
6. 12" HIGH PREFAB. 18 GA. GALV. STEEL SUPPORT CURB WITH 1-1/2" PRESSURE TREATED WOOD NAILER AND SHEET METAL COUNTERFLASHING, PATE MODEL ES-2 OR EQUAL
7. CANT STRIP, BOTH LONG SIDES OF CURB
8. 3/8"ø LAG SCREW WITH MIN. 4" EMBED INTO BLOCKING, MAX. 24" O.C., MAX. 3" FROM ENDS, MIN. (2) EACH SIDE OF CURB
9. 4X6 BLOCKING BETWEEN JOISTS WITH U46 HANGERS EACH END
10. ROOF FRAMING, SEE STRUCTURAL



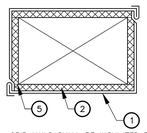
NOTES:
A. SUPPORT SPACING TO BE AT MAXIMUM 8FT O.C.

DUCT SUPPORT ON ROOF (WOOD) | NTS | 2

1. GALVANIZED SHEET METAL DUCT.
2. 1" THICK ACOUSTIC DUCT LINER, LINER TO BE ADHERED TO DUCT. w/ 100% ADHESIVE (MIRACLE PF96)
3. NOT MORE THAN 2" FROM LEDGE OF DUCT LINER.
4. ALL ENDS OF LINER TO BE COATED WITH ADHESIVE. (MIRACLE PF96). ENDS OF LINER SHALL BE BUTTED FIRMLY TOGETHER.
5. TOP AND BOTTOM SECTIONS OF LINER SHALL OVERLAP THE SIDES.



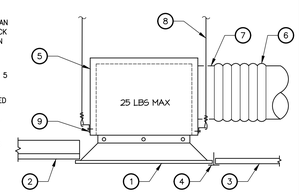
METAL FASTENERS: OMARK INSUL-PINS. DURA DYNE FASTENERS OR GRIP NAILS.



GRIP NAILS SHALL BE INSULATED BY " GRIP NAIL AIR-HAMMER" OR BY AUTOMATIC FASTENER EQUIPMENT.

ACOUSTIC LINED DUCTS | NTS | 5

1. GRILLE/DIFFUSER
2. HARD CEILING
3. T-BAR CEILING
4. ATTACH DIFFUSER TO T-BAR WITH #10 SELF-TAPPING SM SCREWS, MIN. 2 PER SIDE
5. LINED SM PLENUM SIZED 2" LARGER THAN DIFFUSER/GRILLE NECK AND 2" LARGER THAN DUCT CONNECTION
6. ACOUSTICAL FLEX DUCT, MIN. 150% RADIUS ELBOW, MAX. 5 FT LENGTH
7. SPIN-IN COLLAR
8. 12 GA. WIRE ATTACHED TO STRUCTURE
9. 2"x2"x16 GA. ANGLE, SECURE TO PLENUM BOX WITH #12 SELF TAPPING SM SCREWS



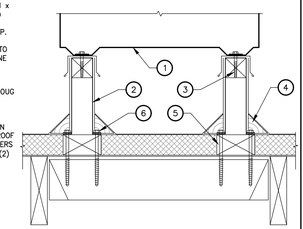
DIFFUSER/GRILLE INSTALLATION | NTS | 3

DIMENSION OF LONGEST SIDE, INCHES	SHEET METAL CAGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS, &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1) AT JOINTS: MIN. HT. IN.	DRIVE SLIP / PLAIN S SLIP RECOM-MENDED GAGE	HEMMED S SLIP RECOM-MENDED GAGE	ALTERNT. BAR SLIP RECOM-MENDED GAGE	REINFORCED BAR SLIP RECOM-MENDED GAGE
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1" x 1" x 1/8" @ 60 IN.	1		24	24	24
31 - 42	22	1" x 1" x 1/8" @ 60 IN.	1			22	22

(1) TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

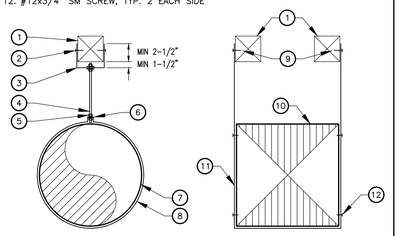
DUCT CONSTRUCTION STANDARDS | NTS | 6

1. OUTDOOR CONDENSING UNIT, SEE SCHEDULE
2. PREFAB GALV. SHEET METAL CURB, 8" HIGH x 24" LONG WITH WOOD NAILER AND COUNTERFLASHING, TYP. 2
3. 3/8"ø LAG SCREW INTO WOOD NAILER, SILICONE SEAL PENETRATION WATERTIGHT
4. CANT STRIP, TYP.
5. PRESSURE TREATED DOUG FIR LEVELING BLOCK, MIN. 2" HIGH. TOP FLAT/LEVEL
6. 4X BLOCKING BETWEEN JOISTS, SECURE TO ROOF JOISTS W/ A34 HANGERS
7. 3/8"ø LAG SCREWS, (2) PER LONG SIDE OF CURBS



OUTDOOR UNIT MOUNTING | NTS | 4

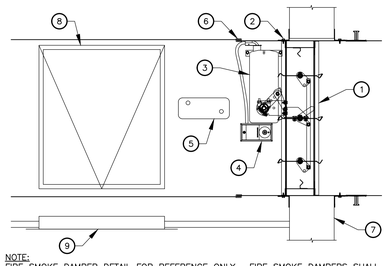
1. 4x4 BLOCKING BETWEEN JOISTS WITH U44 HANGERS AT EACH END, TYP.
2. #12x1-1/2" WOOD SCREWS, 2 PER SIDE
3. 3 WIDE x 16 GA BENT PLATE
4. 3/8"ø THREADED ROD
5. 3/8" NUT & 2" WASHER, TYP. TOP AND BOTTOM OF FLANGE
6. 2-1/2" WIDE X 20 GA STRAP WITH MIN. 3"x2" HIGH FLANGE, TYP.
7. ROUND DUCT
8. 2-1/2" x 20 GA STRAP
9. 1/4"øx1-1/4" LAG BOLT, TYP. 2 EACH END
10. RECTANGULAR DUCT
11. 1-1/2" x 20 GA STRAP AROUND DUCT
12. #12x3/4" SM SCREW, TYP. 2 EACH SIDE



NOTE:
1. SUPPORT DUCTWORK AT 8'-0" O.C.
2. BLOCKING CONDITION IS SHOWN, 2x JOIST CONDITION IS SIMILAR WITH STRAPS AND LAG BOLTS ATTACHING DIRECTLY TO 2x ROOF JOISTS.
3. PER 2010 CBC, SEISMIC RESTRAIN IS NOT REQUIRED FOR RECTANGULAR DUCTS LESS THAN 6 SQ. FT. CROSS SECTION OR ROUND DUCTS LESS THAN 28"ø.

TYPICAL DUCT SUPPORT DETAIL | NTS | 11

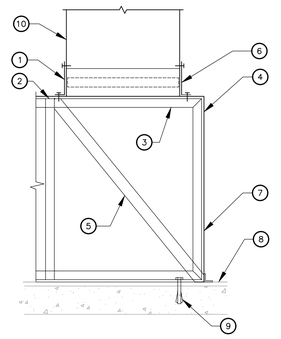
1. COMBINATION FIRE/SMOKE DAMPER, UL555 & UL555S & CSFM LISTED
2. SLEEVE RETAINING ANGLE FASTENED TO FIRE DAMPER SLEEVE. ANGLES SHALL BE INSTALLED ON ALL FOUR SIDES OF DAMPER AND ON EACH SIDE OF WALL. INSTALL RETAINING ANGLES PER MFR'S LISTING REQUIREMENTS
3. DAMPER ACTUATOR MOTOR
4. MANUALLY RE-SETTABLE LINK
5. DUCT SMOKE DETECTOR, INTERLOCK WITH DAMPER ACTUATOR
6. DUCT CONNECTION AS PERMITTED IN ACCORDANCE WITH DAMPER LISTING
7. FIRE RATED WALL, COORDINATE DAMPER REQUIREMENTS WITH FIRE RATING
8. 12" WIDE X DUCT HEIGHT, MIN. DUCT ACCESS DOOR FOR ACCESS TO DAMPER. ACCESS DOOR TO BE IDENTIFIED WITH NAMEPLATE LABELED "FIRE/SMOKE DAMPER"
9. 24"X24" CEILING ACCESS PANEL FOR GYP BOARD AND SPLINE TYPE CEILING. CEILING ACCESS PANEL NOT REQUIRED FOR LAY-IN T-BAR CEILING. ACCESS PANEL SHALL BE IDENTIFIED WITH NAMEPLATE LABELED "FSD". COORDINATE ACCESS PANEL LOCATION WITH OTHER TRADES.



NOTE:
FIRE SMOKE DAMPER DETAIL FOR REFERENCE ONLY. FIRE SMOKE DAMPERS SHALL BE STATE FIRE MARSHAL APPROVED AND COMPLETE INSTALLATION SHALL BE PER MANUFACTURER'S LISTED INSTRUCTIONS WHICH SHALL BE MADE AVAILABLE TO INSPECTING AUTHORITIES.

FIRE/SMOKE DAMPER DETAIL | NTS | 12

1. 2-1/2"x6"x3/16" ANGLE TOP OF PLENUM. SECURE TO PLENUM AND TO FURNACE BASE WITH #12 x 3/4" SM SCREWS, 3 PER LEG, EVENLY SPACED. SEAL AIRTIGHT.
2. 2-1/2"x2-1/2"x3/16" ANGLE FRAME.
3. 2-1/2"x2-1/2"x3/16" WELDED ANGLE FRAME INSIDE MIXED AIR PLENUM. SECURE TO BLOCKING WITH 3/8" LAG BOLT. TYP 3 AT EACH LONG SIDE.
4. MIN. 26 GA SHEET METAL MIXED AIR PLENUM WITH 1" ACOUSTIC LINING ON THE INSIDE.
5. 2-1/2"x2-1/2"x3/16" DIAGONAL FRAME
6. FILTER HOUSING. SEE FAN COIL UNIT SCHEDULE ON M0.0.1.
7. MIXED AIR PLENUM.
8. EXISTING CONCRETE FLOOR.
9. 3/8"øx2-1/2" EMBED. HILTI KB-TZ2 INTO CONCRETE FLOOR. TORQUE TO 30 FT-LBS PER ICC ESR-4266.
10. FAN COIL UNIT, SEE SCHEDULES.



NOTE:
1. INSTALL TO MAINTAIN ACCESS TO DAMPERS, ACTUATORS, FILTERS AND ACCESS DOORS.
2. SEE DETAIL 7/M0.0.2 FOR MORE INFORMATION.

MIXED AIR PLENUM DETAIL | NTS | 8

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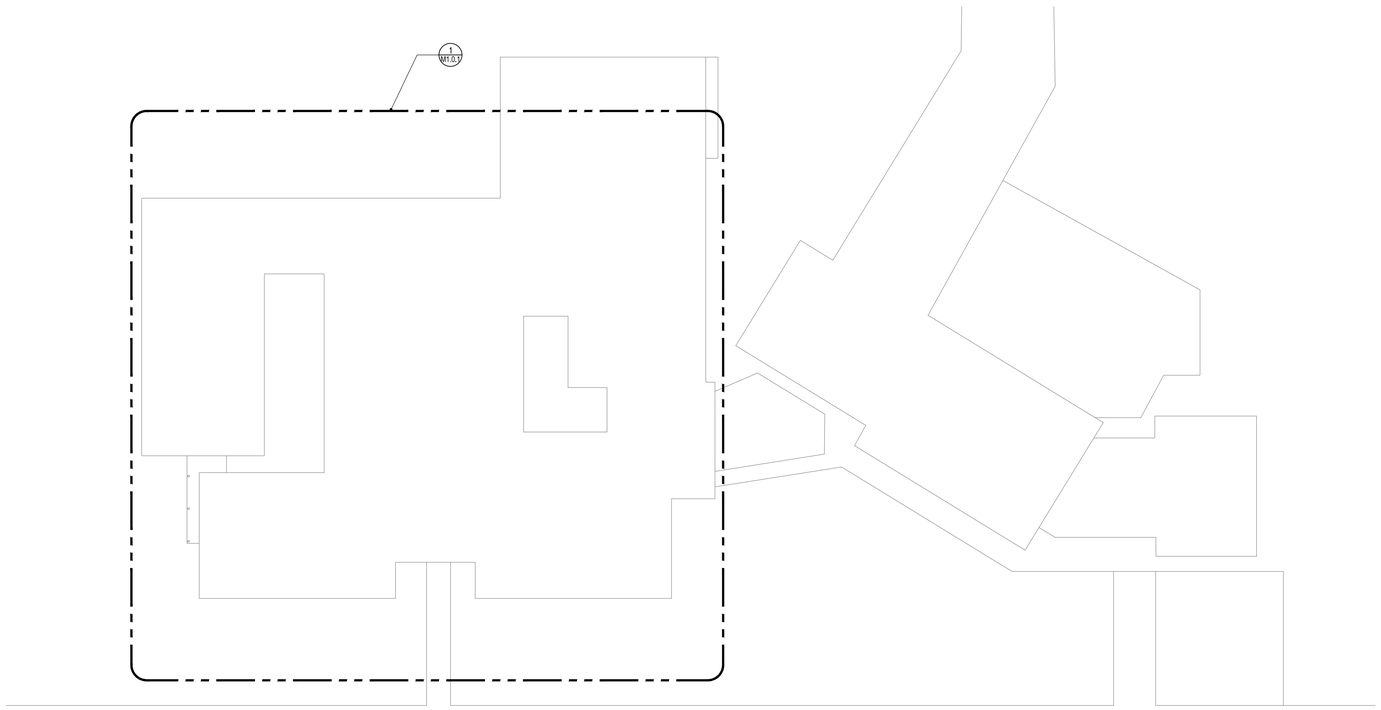
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GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

1 MECHANICAL SITE PLAN
SCALE: 1" = 20'

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Drawing Title
MECHANICAL SITE PLAN

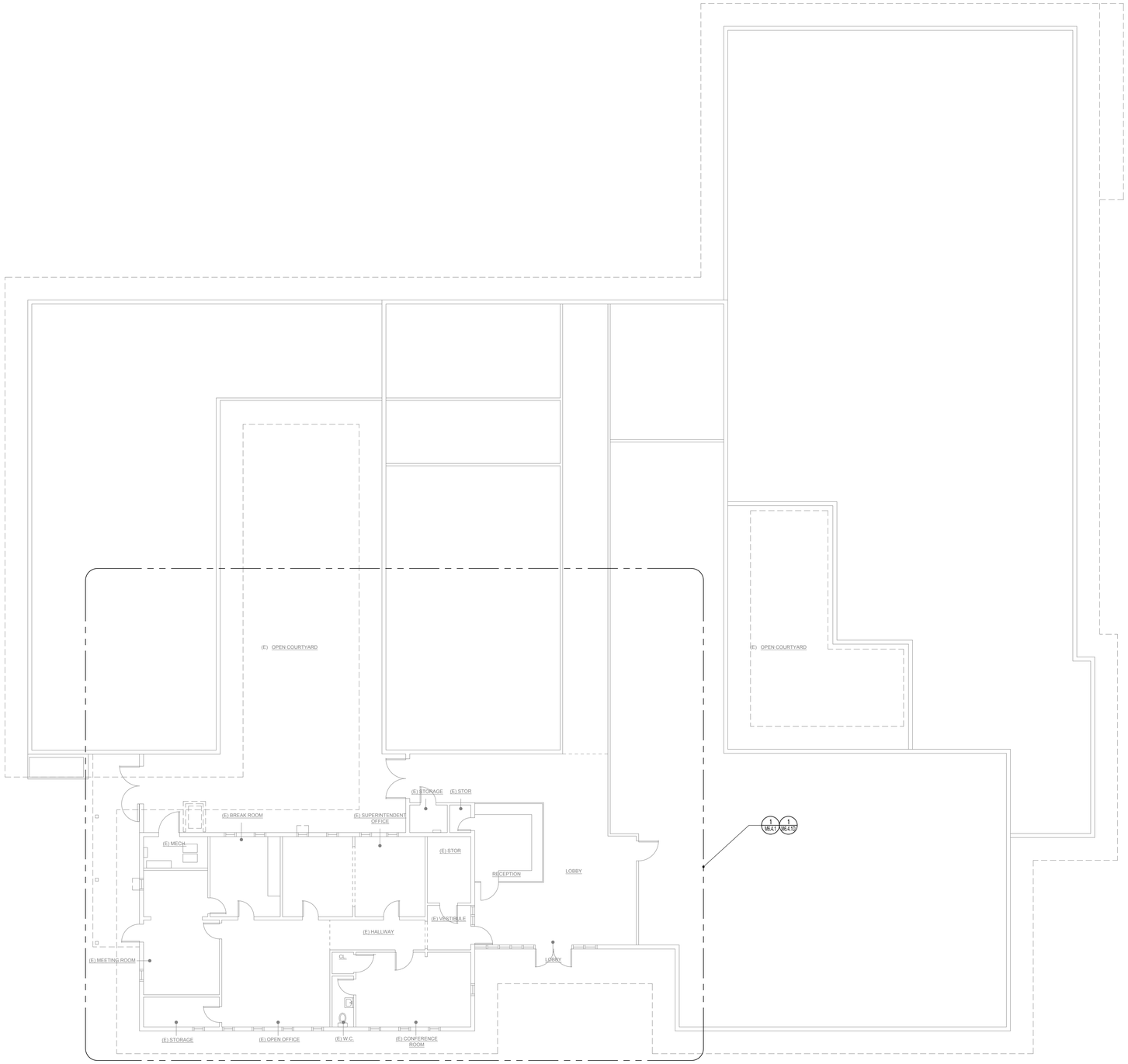
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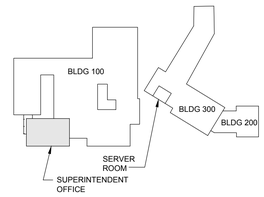
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1 MECHANICAL OVERALL FLOOR PLAN
1/8" = 1'-0"



KEY PLAN

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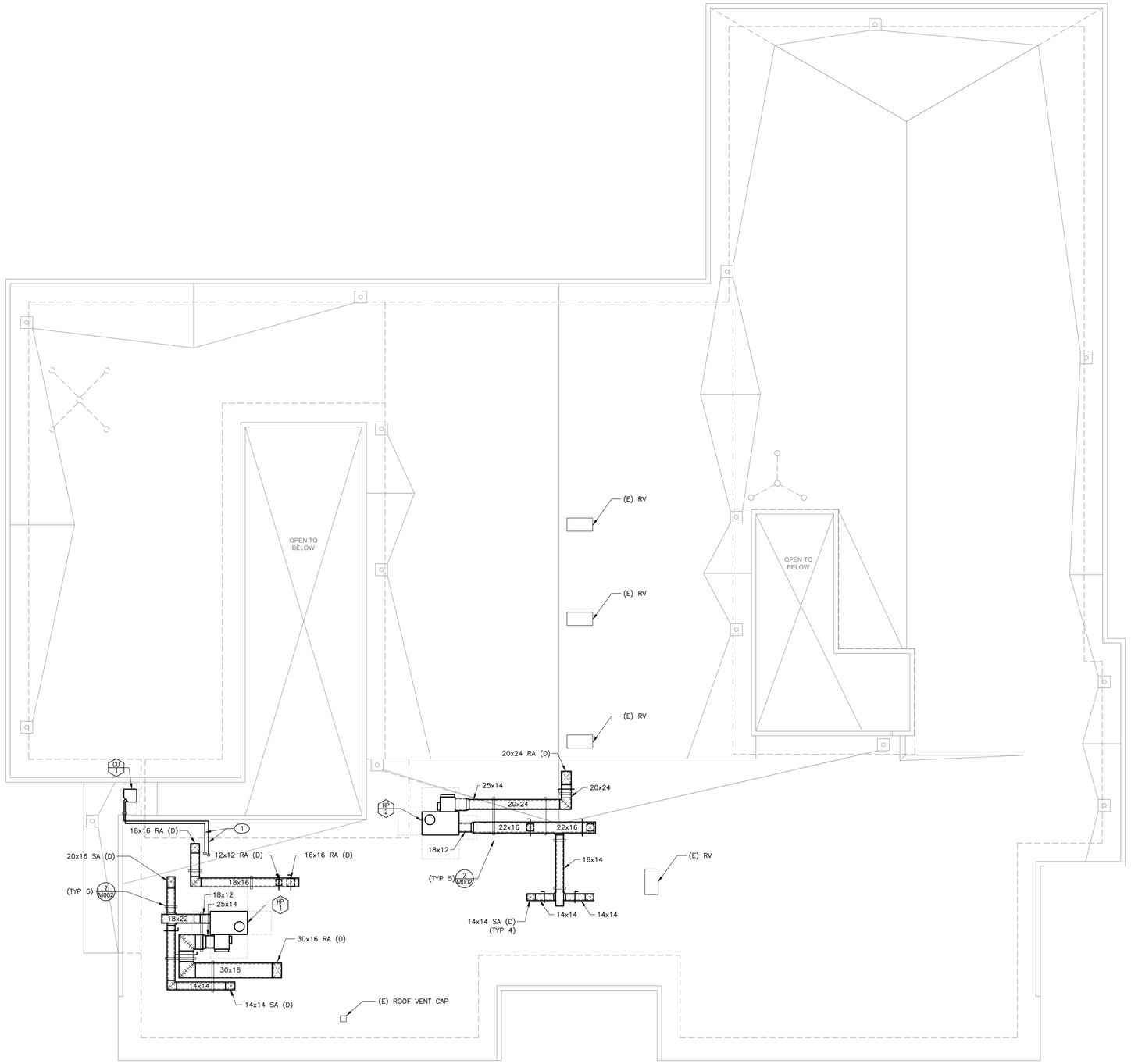
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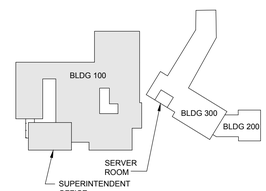
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KEY NOTES

1. REFRIGERANT LINES, SEE MANUFACTURER'S MANUAL FOR SIZES.



1 MECHANICAL OVERALL ROOF PLAN
1/8" = 1'-0"

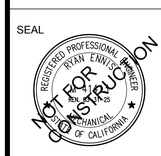


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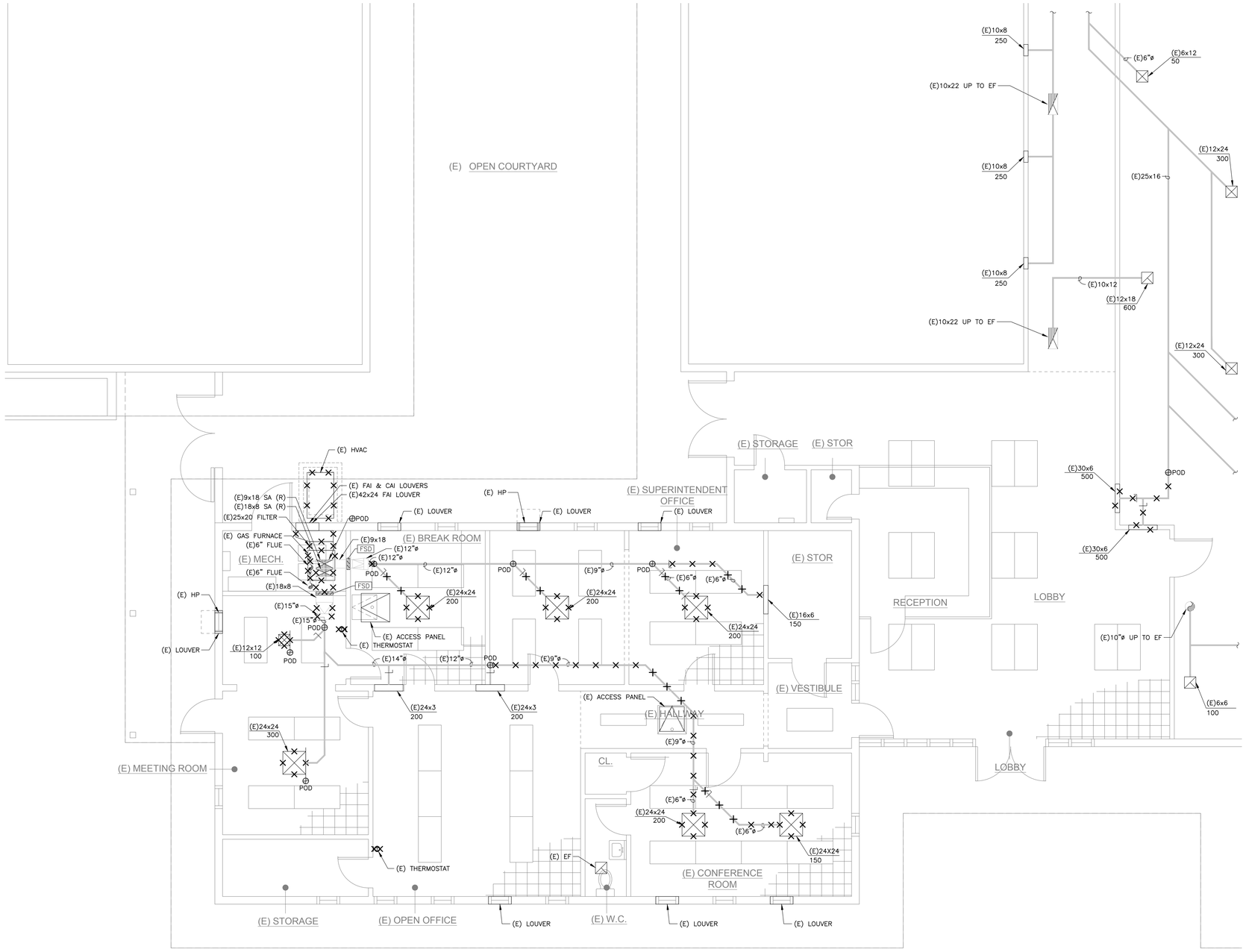
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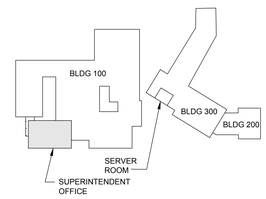
1. REMOVE (E) CEILING DIFFUSER/GRILLE AND ASSOCIATED DUCTWORK SHOWN HATCHED BACK TO POD.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



1 MECHANICAL DEMO ENLARGED FLOOR PLAN
1/4" = 1'-0"



KEY PLAN

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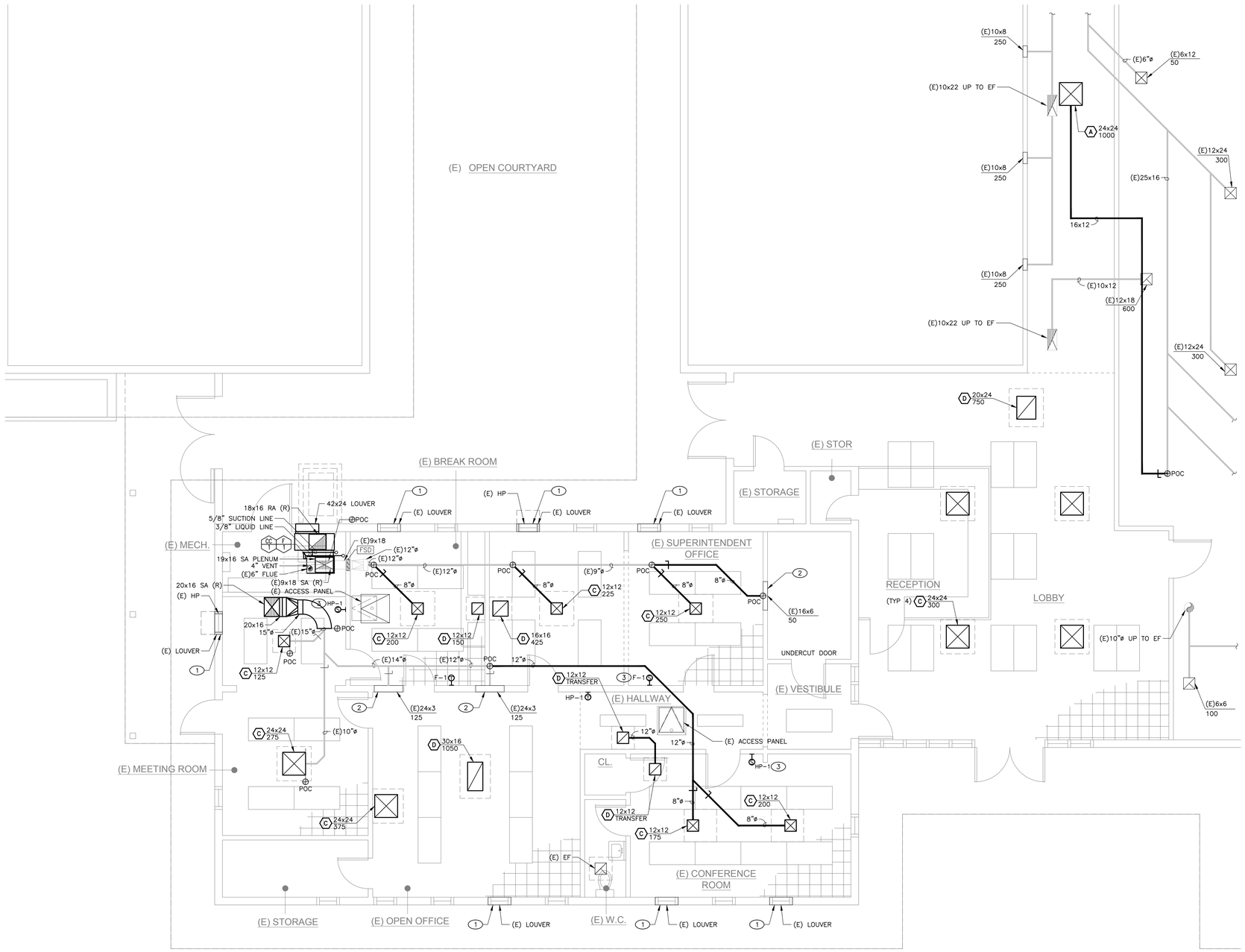
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1 MECHANICAL ENLARGED FLOOR PLAN

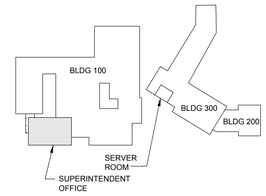
1/4" = 1'-0"

KEY NOTES

1. PATCH (E) LOUVERS. COORDINATE WITH ARCHITECT FOR COLOR.
2. REBALANCE (E) AIR INLET/OUTLET TO AIR QUANTITY SHOWN.
3. PROVIDE REMOTE AVERAGING SENSOR CONNECTED TO ASSOCIATED MECHANICAL UNIT THERMOSTAT SHOWN.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



KEY PLAN

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MECHANICAL ENLARGED FLOOR PLAN

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PLUMBING MATERIAL SCHEDULE

SYSTEM	LOCATION	MATERIAL		JOINING METHOD	
		MATERIAL	TEST METHOD	MATERIAL	TEST METHOD
CONDENSATE DRAIN	ABOVE SLAB	TYPE 'M' HARD TEMPER SEAMLESS COPPER	ASTM B88	WROUGHT COPPER FITTINGS WITH 95/5 TIN-SILVER SOLDERED JOINTS	ANSI B16.22
CONDENSATE DRAIN	ABOVE SLAB	PVC-DWV PIPE, SCHEDULE 40 THICKNESS	ASTM D2665	SOLVENT WELD	ASTM D2665
NATURAL GAS	ABOVE SLAB	SCHEDULE 40 BLACK STEEL PIPE	ASTM A53	150 PSI BLACK MALLEABLE IRON SCREWED FITTINGS	ANSI B16.3, ANSI B16.8
NATURAL GAS	ABOVE SLAB	SCHEDULE 40 HOT DIPPED GALVANIZED STEEL PIPE	ASTM A53	150 PSI HOT DIPPED GALVANIZED MALLEABLE IRON SCREWED FITTINGS	ANSI B16.3, ANSI B16.8

NOTES:
1. PRIME AND PAINT ALL GAS PIPING.

PLUMBING LEGEND

SYMBOL	ITEM	ABBR.
	FIXTURE DESIGNATION UNIT ABBREVIATION NUMBER	
	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
-CW-	DOMESTIC COLD WATER	CW
-HW-	DOMESTIC HOT WATER	HW
	DOMESTIC HOT WATER SUPPLY	HWS
	DOMESTIC HOT WATER RETURN	HWR
-V-	VENT	V
G	GAS	G
MG	MEDIUM PRESSURE GAS	MG
LPG	LIQUID PROPANE GAS	LPG
S	SEWER	S
GW	GREASE WASTE	GW
OS	OIL/SAND WASTE	OS
AW	ACID WASTE	AW
SD	STORM DRAIN	SD
RD	ROOF DRAIN	RD
OD	OVERFLOW DRAIN	OD
C	CONDENSATE DRAIN	C
SCD	SECONDARY DRAIN	SCD
D	DRAIN	D
T&P	TEMPERATURE & PRESSURE RELIEF	T&P
FS	FIRE SPRINKLER	FS
	PIPE CAP	
	PIPE RISER/DROP	(R)/(D)
	SHUT-OFF VALVE IN BOX	SOV
FCO	FLOOR CLEANOUT	FCO
COTG	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	CLEANOUT	CO
	HOSE BIBB	HB
	OVERFLOW DRAIN OUTLET	
	BALL VALVE	BV
	GATE VALVE	GV
	CHECK VALVE	CHK.V
	MIXING VALVE	TMV
	SHUT-OFF COCK	SOC
	CIRCULATION PUMP	CP
	BALANCING VALVE	BLV
	TRAP PRIMER	TP
	TYPICAL	(TYP)
	VENT THRU ROOF	VTR
	UNDERGROUND	UG
	UNDER FLOOR	UF
	ABOVE CEILING	AB.C.
	TO ABOVE/BELOW	TA/TB
	FROM ABOVE/BELOW	FA/FB
	CONTINUATION	CONT.
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC

PLUMBING SPECIFICATIONS

A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO:
- A.1. 2022 CALIFORNIA BUILDING CODE
- A.2. 2022 CALIFORNIA MECHANICAL CODE
- A.3. 2022 CALIFORNIA PLUMBING CODE
- A.4. 2022 CALIFORNIA ELECTRICAL CODE
- A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS
- A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS – TITLE 24
- A.7. NATIONAL FIRE PROTECTION ASSOCIATION
- A.8. CALIFORNIA STATE FIRE MARSHAL

B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER.

C. THE PLUMBING CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF PLUMBING EQUIPMENT.

D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER.

E. THE LOCATIONS OF EQUIPMENT, PIPING, AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER.

F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE.

G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY.

H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS PLUMBING COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED.

I. CHECK ALL SYSTEMS FOR LEAKS. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY.

J. BEFORE COMMENCING WORK CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS AND ENSURE THAT THESE CAN BE PROPERLY CONNECTED WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COSTS SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN.

K. COORDINATE ALL NEW OR CHANGING UTILITY SERVICES WITH UTILITY PROVIDER AS SOON AS POSSIBLE. ALL WORK PERFORMED NOT IN ACCORDANCE WITH THE UTILITY COMPANIES REQUIREMENTS PRIOR TO COORDINATING WITH THE UTILITY COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

L. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.

M. MAKE ALL CONNECTIONS TO EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER AS FAR AS TRAPS, DRAINS, FLEXIBLE CONNECTIONS, ETC. AND AS REQUIRED BY THE EQUIPMENT AND LOCATION.

N. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, FIXTURE MOUNTING HEIGHTS AND ADA ACCESSIBILITY REQUIREMENTS.

O. PIPING INSULATION (INTERIOR APPLICATIONS):
- O.1. GLASS FIBER INSULATION: ASTM C 547 AND ASTM C 795. 'K' ('KSI') VALUE: 0.24 AT 75 DEGREES F, WHEN TESTED IN ACCORDANCE WITH ASTM C 177. MAXIMUM SERVICE TEMPERATURE: 850 DEGREES F. MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME.
- O.2. VAPOR BARRIER JACKET: WHITE KRAFT PAPER WITH GLASS FIBER YARN, BONDED TO ALUMINIZED FILM; MOISTURE VAPOR TRANSMISSION WHEN TESTED IN ACCORDANCE WITH ASTM E 96/E 96M OF 0.02.
- O.3. INSULATION THICKNESS SCHEDULES:
  - O.3.1. DOMESTIC HOT AND TEMPERED WATER SUPPLY:
    - O.3.1.1. 2 INCH THICKNESS FOR PIPING 2 INCH AND LARGER.
    - O.3.1.2. 1-1/2 INCH THICKNESS FOR PIPING 1 INCH TO 1-1/2 INCH.
    - O.3.1.3. 1 INCH THICKNESS FOR PIPING LESS THAN 1 INCH.
  - O.3.2. DOMESTIC COLD WATER LOCATED IN UNHEATED AREAS:
    - O.3.2.1. 1 INCH THICKNESS FOR PIPING 1-1/2 INCHES AND LARGER.
    - O.3.2.2. 3/4 INCH THICKNESS FOR PIPING 1 INCHES AND SMALLER.

P. INSULATE DOMESTIC HOT WATER, TEMPERED WATER AND WASTE PIPING BELOW HANDICAPPED PLUMBING FIXTURES WITH MOLDED SINGLE PIECE REMOVABLE INSULATION COVERS, FOAM, FIRE RESISTANT, TRUEBRO, OR EQUAL. INSTALL INSULATION COVERS IN ACCORDANCE WITH CBC ACCESS REQUIREMENTS.

Q. FIXTURES, DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1953 LEGISLATION WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS.

R. PROVIDE COMPRESSION SHUTOFF CONTROL STOP VALVES WITH IPS INLETS AND THREADED BRASS NIPPLES AT PIPE CONNECTION ON WATER SUPPLIES TO EACH FIXTURE.

S. PROVIDE CHROMIUM-PLATED FINISH ON FITTINGS AND ACCESSORIES EXPOSED TO VIEW.

T. FIXTURE FITTINGS AND TRIM: CONFORM TO ASME A112.18.1M AND ASME A112.19.5, AS APPLICABLE.

U. PROVIDE WATER HAMMER ARRESTORS AT END OF PIPE RUNS TO TWO OR MORE FIXTURES, PROPERLY SIZED WITH SUFFICIENT DISPLACEMENT VOLUME TO DISSIPATE CALCULATED ENERGY IN THE PIPING SYSTEMS. WATER HAMMER ARRESTORS SHALL BE STAINLESS STEEL SHELL WITH STAINLESS STEEL BELLOWS CONTAINED WITHIN THE CASING.

V. PROVIDE PIPE SLEEVES WHERE PIPES AND TUBING PASS THROUGH WALLS, FLOORS, ROOFS, AND PARTITIONS. FINISH FLUSH AT BOTH ENDS. EXTEND 2 INCHES (50 MM) ABOVE FINISHED FLOORS. PACK SPACE BETWEEN PIPE OR TUBING AND SLEEVE, AND CALK.

W. IDENTIFY PIPING WITH TAPE AND DECALS. INSTALL LABELING ON PIPE AT INTERVALS OF NOT MORE THAN 20 FEET (6 METERS) AND AT LEAST ONCE IN EACH ROOM AND EACH STORY TRAVERSED BY PIPELINE.

X. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.

Y. ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 10' FROM ANY OUTSIDE AIR INTAKE OR OPENING TO THE BUILDING.

Z. ALL EXPOSED MATERIAL SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED.

PLUMBING SHEET INDEX

SHEET NUMBER	SHEET NAME
P0.0.1	PLUMBING SCHEDULES, LEGEND & NOTES
P0.0.2	PLUMBING DETAILS
P1.0.0	PLUMBING SITE PLAN
P1.0.1	PLUMBING OVERALL FLOOR PLAN
P2.0.1	PLUMBING ROOF PLAN
P6.4.1D	PLUMBING DEMO ENLARGED FLOOR PLAN
P6.4.1	PLUMBING ENLARGED FLOOR PLAN

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PLUMBING SCHEDULES, LEGEND, & NOTES

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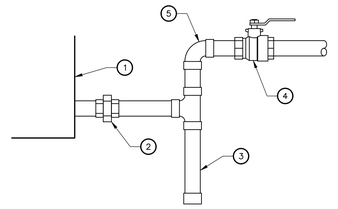
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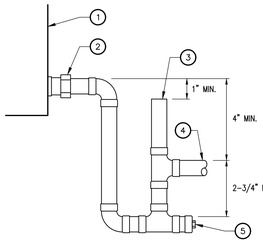
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1. GAS FIRED EQUIPMENT
2. RIGID CONNECTION WITH UNION
3. MIN. 6" DIRT LEG WITH REMOVABLE CAP
4. GAS SHUT-OFF VALVE
5. GAS PIPING ELBOW DOWN IN DIRECTION OF DIRT LEG



P1GP04A

GAS CONNECTION DETAIL | NTS | 1

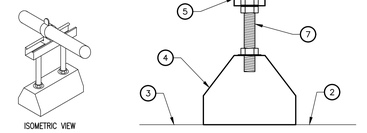


1. MECHANICAL EQUIPMENT
2. UNION
3. TRAP VENT, DO NOT CAP CLOSED
4. SLOPE CONDENSATE DRAIN AT 1/8" PER FOOT, MIN. SEE PLAN FOR SIZE AND ROUTING
5. CLEAN-OUT PLUG

CONDENSATE CONNECTION DETAIL | NTS | 2

1. PIPING ON ROOF.
2. PVC SINGLE PLY PROTECTION MATERIAL.
3. ROOFING MATERIAL.
4. 'B-LINE' "DURA-BLOK" ROOFTOP PIPE SUPPORT OR EQUAL. WOOD BLOCKING NOT ACCEPTABLE.
5. 'B-LINE' 14 GA. GALVANIZED SLOTTED 1" CHANNEL.
6. 'B-LINE' B2000 SERIES PIPE CLASP WITH THRU-BOLT.
7. PROVIDE (2) 'B-LINE' 1/2" ADJUSTABLE THREADED ROD RISERS WITH NUTS.

NOTE:
1. PROVIDE PIPE SUPPORT AT MAXIMUM SPACING OF 8FT.



ISOMETRIC VIEW

P1GP04A

TYPICAL PIPE SUPPORT ON ROOF (COND.) | NTS | 3

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SEAL

REGISTERED PROFESSIONAL ENGINEER
RYAN ENNIS HUNTER
No. M 31425
MECHANICAL
STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

Drawing Title
PLUMBING DETAILS

Drawn By

Checked By

NO.	DATE	ISSUE

Project No.
23-525

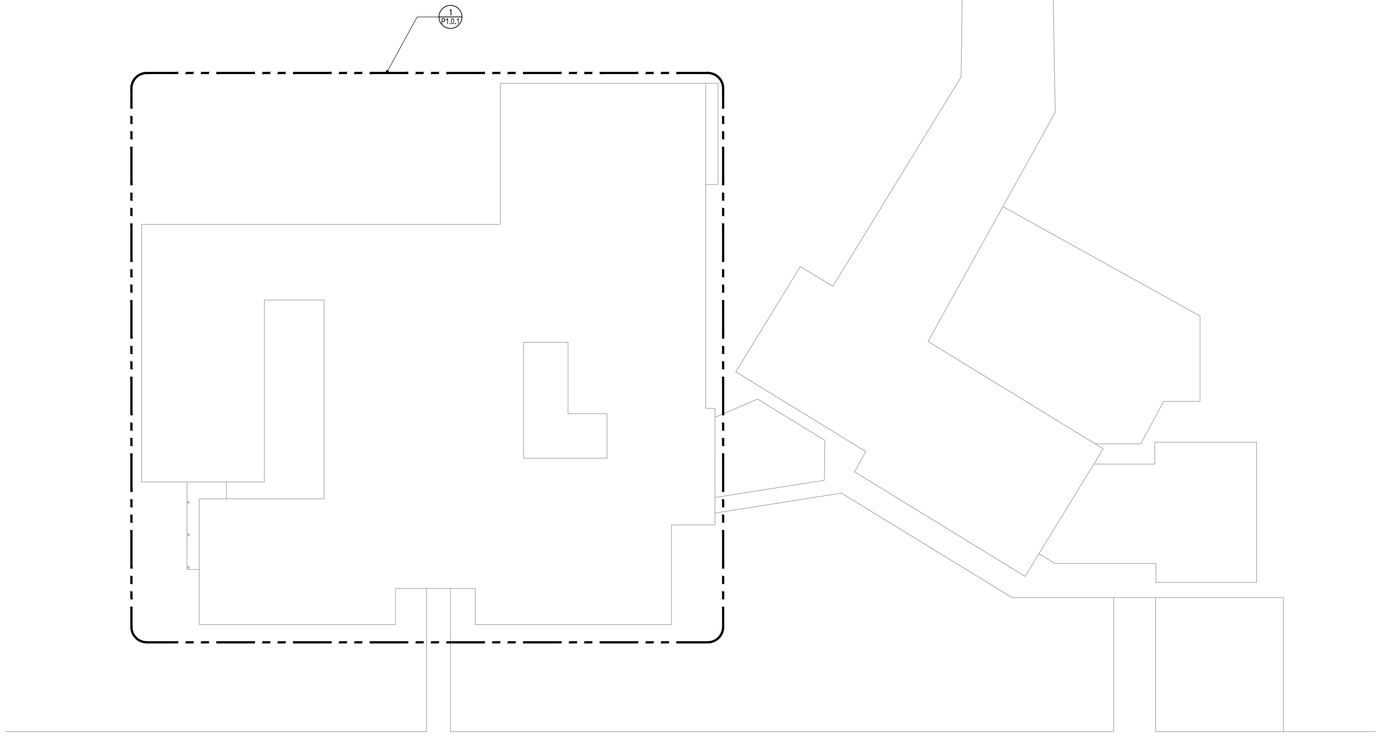
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GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

1 **PLUMBING SITE PLAN**
SCALE: 1" = 20'

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PLUMBING SITE PLAN

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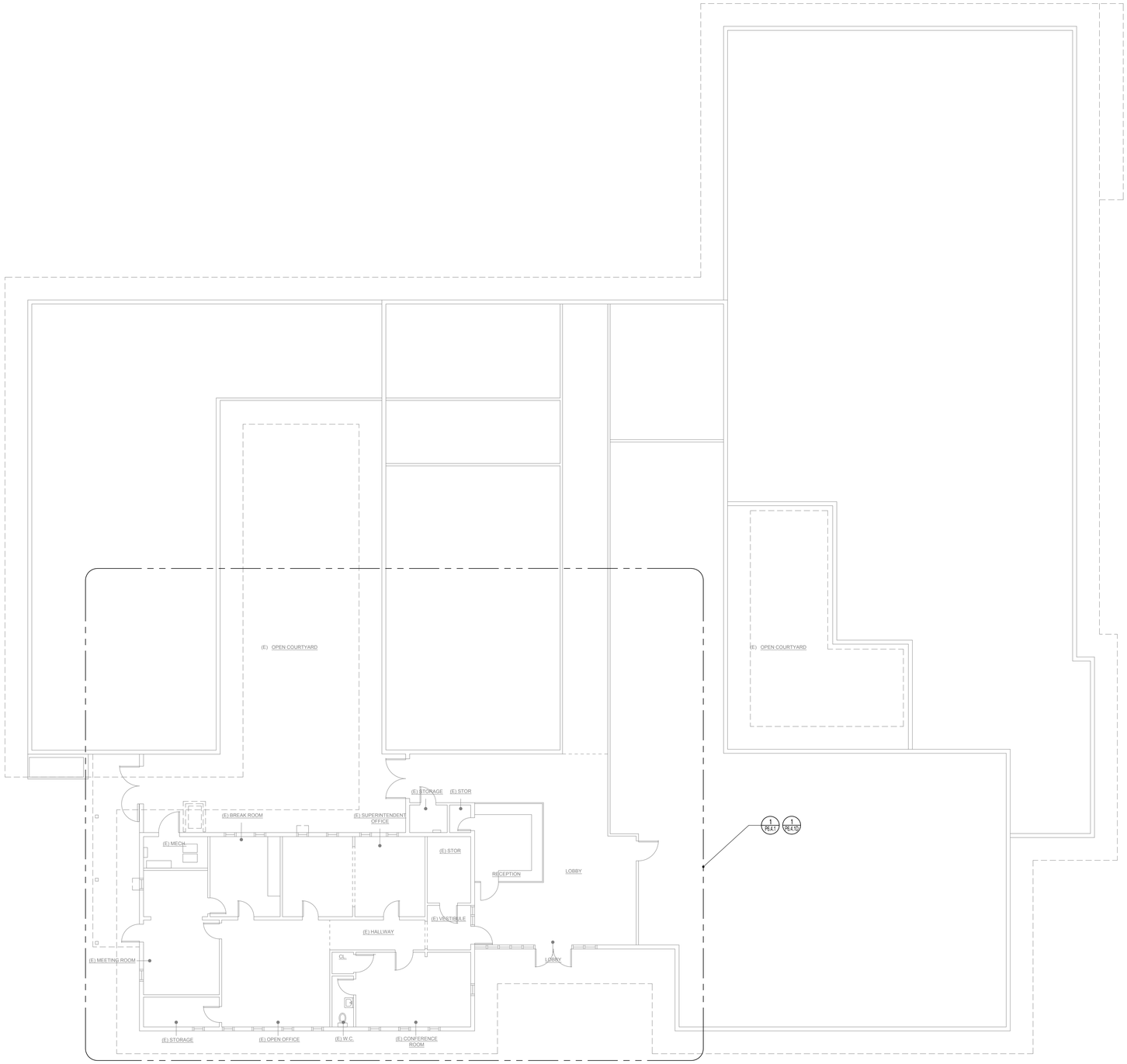
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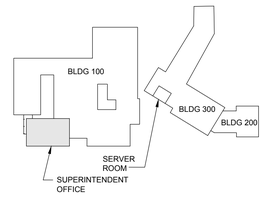
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1 PLUMBING OVERALL FLOOR PLAN
1/8" = 1'-0"



KEY PLAN

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HVAC & ROOF UPGRADES

Drawing Title
PLUMBING OVERALL FLOOR PLAN

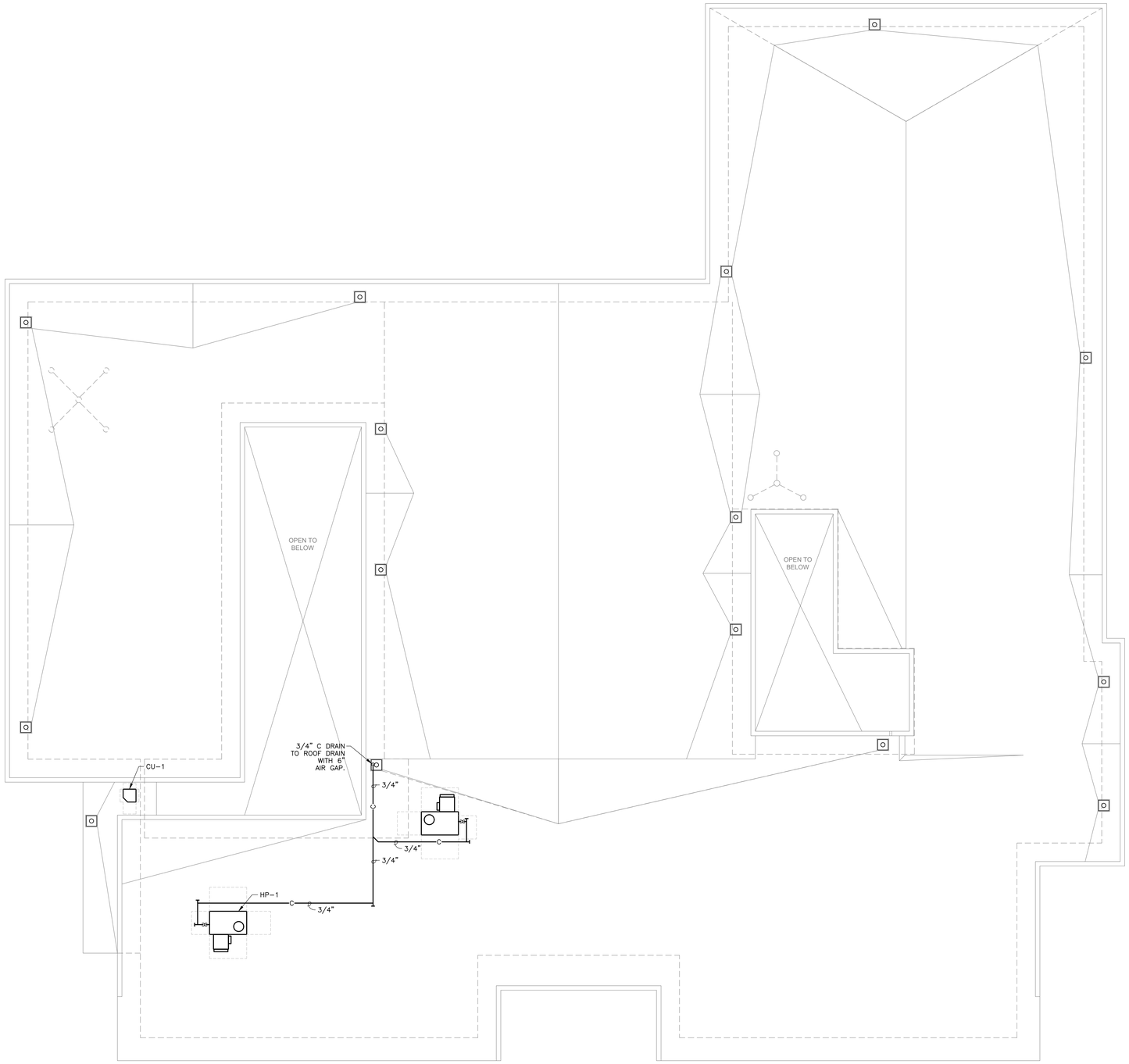
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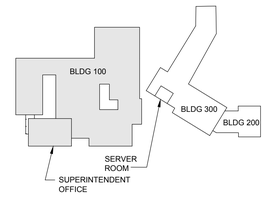
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1 PLUMBING OVERALL ROOF PLAN
1/8" = 1'-0"



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PLUMBING ROOF PLAN

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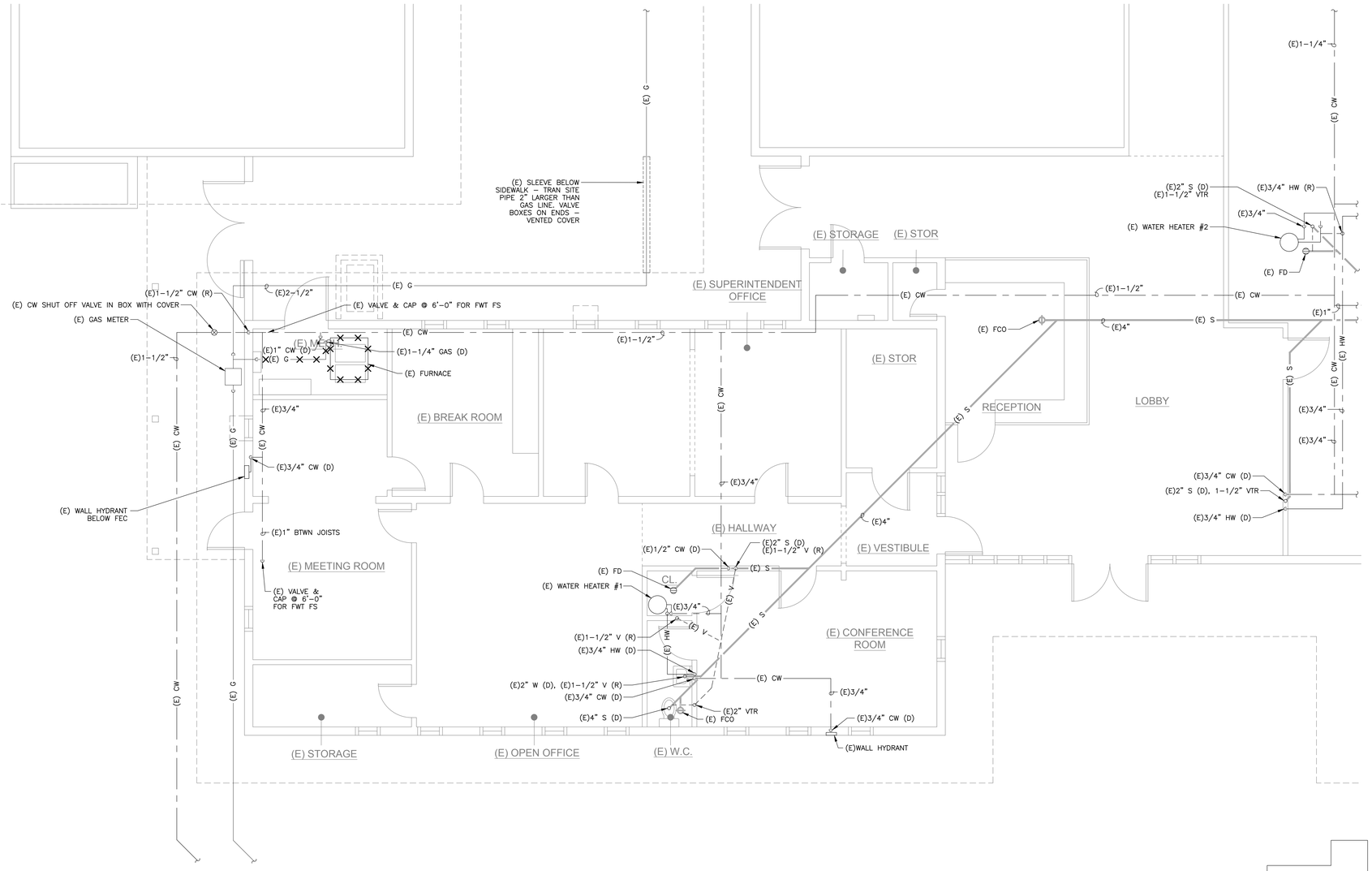
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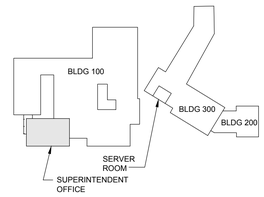
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1 PLUMBING DEMO ENLARGED FLOOR PLAN
1/4" = 1'-0"



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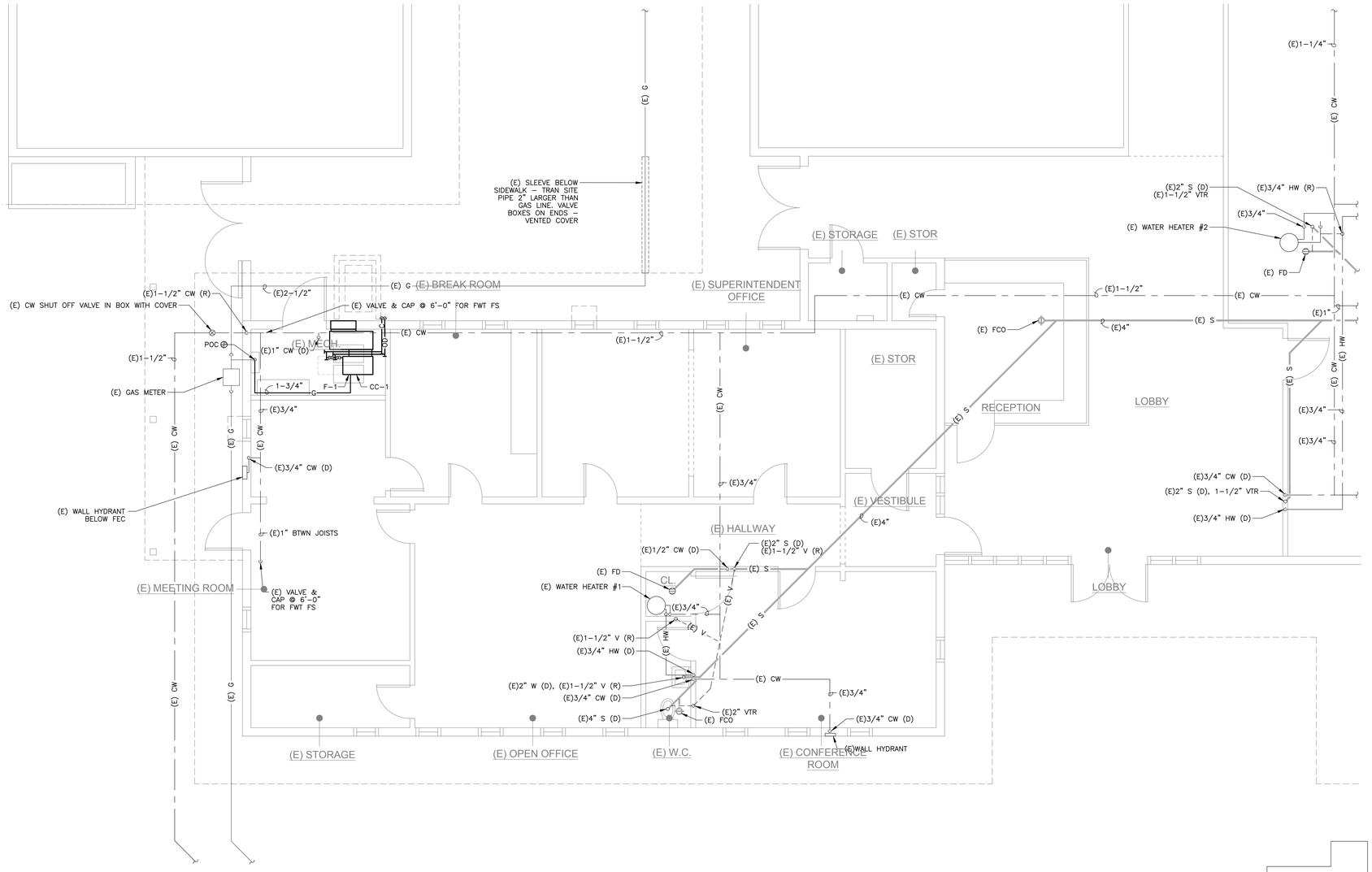
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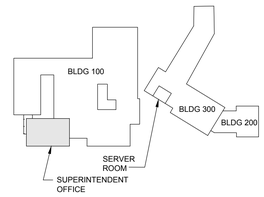
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1 PLUMBING ENLARGED FLOOR PLAN
1/4" = 1'-0"



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ELECTRICAL SYMBOL LEGEND

ALL SYMBOLS SHOWN IN THIS LEGEND ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

SYMBOL	DESCRIPTION
	POWER
	MAIN SWITCHBOARD OR DISTRIBUTION BOARD, PAD OR FLOOR MOUNTED AS NOTED.
	RECESSED MOUNTED LIGHTING OR DISTRIBUTION PANEL
	SURFACE MOUNTED LIGHTING OR DISTRIBUTION PANEL
	RECESSED TERMINAL CABINET WITH 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
	SURFACE MOUNTED TERMINAL CABINET WITH 3/4"C PLYWOOD BACKBOARD, DUPLEX RECEPTACLE & #6 CU GND, UNO.
T	DISTRIBUTION TRANSFORMER, MOUNTING AND SIZE AS NOTED
	NON-FUSED DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER DISCONNECT SWITCH
F	FUSED DISCONNECT SWITCH; SIZE DISCONNECT AND FUSES PER UNIT LABEL
F	NON-FUSED / FUSED DISCONNECT; SEE DISCONNECT SWITCH SCHEDULE
	MOTOR STARTER/CONTROLLER
	COMBINATION CIRCUIT BREAKER DISCONNECT/MOTOR STARTER.
	COMBINATION FUSIBLE DISCONNECT/MOTOR CONTROLLER; PROVIDE FUSES PER MANUFACTURER'S REQUIREMENTS. N.F. INDICATES NON-FUSED.
	WALL MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	CEILING MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	FLOOR MOUNTED JUNCTION BOX – SIZE AS REQUIRED BY CODE.
	PLUGMOLD
	POWER POLE
	FLOOR MOUNTED COMBO DUPLEX RECEPTACLE / TELEPHONE/DATA
	FLOOR MOUNTED COMBO DOUBLE DUPLEX RECEPTACLE / TELEPHONE/DATA
PLD	PRODUCTION LIGHTING DEVICE
EV EV	ELECTRIC VEHICLE CHARGING STATION, DUAL PORT & SINGLE PORT
	CIRCUITS
	STUB
	CONTINUATION
	CONDUIT RISER – UP
	CONDUIT DROP – DOWN
	CONDUIT CONCEALED IN CEILING OR WALL.
	CONDUIT CONCEALED IN UNDERFLOOR OR UNDERGROUND
	EXISTING CONDUIT TO REMAIN.
	CONDUIT & CONDUCTORS FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT & CONDUCTORS TO REMAIN FOR LOW VOLTAGE MOTION SENSORS
	EXISTING CONDUIT AND/OR CONDUCTORS TO BE REMOVED. UNDERGROUND CONDUIT MAY BE ABANDONED IN PLACE.
	HOMERUN TO PANELBOARD OR TERMINAL CABINET WITH CONDUCTORS AS NOTED
#	CIRCUIT CONDUCTORS: LONG TICK INDICATES NEUTRAL CONDUCTOR; SHORT TICKES INDICATE PHASE CONDUCTORS; CURVED TICK INDICATES EQUIPMENT GROUNDING CONDUCTOR; ADDITIONAL CURVED TICK INDICATES ISOLATED GROUNDING CONDUCTOR. NUMBER BY TICKES INDICATE WIRE GAUGE OTHER THAN 12 AWG CU. NO TICKS INDICATE 2#12 CU, 1#12 CU GND, IN 1/2" CONDUIT. OTHERS AS NOTED ON PLAN. NOTE: PROVIDE A CODE SIZED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS FOR THIS PROJECT, WHETHER SHOWN ON PLAN OR NOT.
	FLEXIBLE CONDUIT, 6'-0" LONG MAX. WITH #12 CU GROUND, UNO.
	LEADERS
	BRACKET
	LEADERS
	LIGHTING
	LUMINAIRE – SURFACE
	LUMINAIRE – WALL
	SPOT/FLOOD LUMINAIRE – GROUND MOUNTED. FOR BLDG WALL MOUNTED AS WELL.
	EXTERIOR POLE FIXTURE – SINGLE HEAD
	EXTERIOR POLE FIXTURE – TWIN HEAD
	EXTERIOR PATHWAY POST TOP POLE FIXTURE
	TAGS
X	KEYNOTE SHOWN ON SAME SHEET
'XX' XX–Xx	LIGHT FIXTURE TAG: FIXTURE TAG 'XX' CIRCUIT NUMBER; PANEL XX–Xx SWITCH LEG
X	FEEDER DESIGNATION TAG
X	FOOD SERVICE EQUIPMENT DESIGNATION TAG
X Ex. 1	DETAIL DESIGNATION: TOP LETTER INDICATES DETAIL, BOTTOM LETTER/NUMBER INDICATES SHEET
REF x	MECHANICAL EQUIPMENT I.D. TAG – MP&S

FOOTNOTE:

[1] PROVIDE 44" MAX. TO TOP OF BOX AT AREAS WITH FORWARD ACCESSIBLE APPROACH KNEE CLEARANCE, OR PROVIDE 46" MAX. TO TOP OF BOX AT AREAS WITH PARALLEL ACCESSIBLE APPROACH (PER CBC 11B–308).

SYMBOL	DESCRIPTION
	ONE LINE DIAGRAM
(N) PANEL "A"	PANEL IDENTIFICATION
100A 3P	CIRCUIT BREAKER
100A 3P	FUSED SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND
	UNDERGROUND TERMINATION SERVICE LUG
M	UTILITY METER WITH CURRENT TRANSFORMER COMPARTMENT METER SOCKET
M	CUSTOMER–OWNED MULTIFUNCTION METER WITH CURRENT TRANSFORMERS
	MOTOR
	TRANSFORMER WITH GROUND
	UFER GROUND
	BOND TO COLD WATER PIPE, GAS PIPE, BUILDING STEEL
	AUTOMATIC TRANSFER SWITCH
	NEUTRAL LINK
SPD	SURGE PROTECTIVE DEVICE

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7–16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7–16 SECTION 13.3 AS DEFINED IN ASCE 7–16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24,1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE–APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☐ ☐ ☐ ☒ SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH HCAI (OSHPD) PRE–APPROVAL INCLUDED
☐ ☐ ☐ ☐ IN THESE DRAWINGS WITH PROJECT–SPECIFIC NOTES AND DETAILS.

GENERAL NOTES

ALL GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

1. THESE GENERAL NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN THE EXECUTION OF THE ELECTRICAL WORK AND TO BE INCLUDED IN CONJUNCTION WITH THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATION REQUIREMENTS. SOME OF THE GENERAL NOTES ARE EXCERPTS FROM THE SPECIFICATION.
2. COORDINATE ALL ELECTRICAL SERVICES WITH THE RESPECTIVE UTILITY COMPANIES AND PROVIDE ALL TRENCHING, CONDUITS, WIRING, METER FACILITIES AND OUTLETS REQUIRED BY THEM.
3. WORKMANSHIP SHALL BE OF THE HIGHEST GRADE. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE ACCEPTANCE OF THE ARCHITECT.
4. INSTALL ALL EQUIPMENT, CONDUITS, OUTLETS, AND FIXTURES IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF ALL APPLICABLE CODES (CEC, STATE, COUNTY AND CITY).
5. DO NOT SCALE PLANS FOR FIXTURES, DEVICES, OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS. ALSO REFER TO ACTUAL ON–SITE CONDITIONS.
6. ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND CEC 110.3.
7. ALL ELECTRICAL DEVICES AND EQUIPMENT, FIXTURES, CONDUITS AND WIRING SHOWN ON THESE PLANS ARE NEW, UNLESS OTHERWISE NOTED.
8. OUTLET BOXES INSTALLED IN FIRE WALLS SHALL BE ONE–PIECE STEEL AND INSTALLED IN SEPARATE (STAGGERED) STUD PENETRATIONS, MINIMUM 24 INCHES HORIZONTAL SEPARATION. FIRE WALLS SHALL BE MADE IN ACCORDANCE WITH CBC AND ELECTRICAL CODES.
9. THE FINAL LOCATION OF ALL OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT AND/OR OWNER AT TIME OF CONSTRUCTION.
10. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE WEATHER–PROTECTED.
11. CONTRACTOR SHALL VERIFY THAT ALL LIGHTING FIXTURES, CEILING TRIMS, AND FRAMES ARE COMPATIBLE WITH CEILING SYSTEM INSTALLED.
12. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATIONS AND INSTALLATIONS WITH THE MECHANICAL CONTRACTOR. MAINTAIN REQUIRED CLEARANCES (MINIMUM 3 INCHES) BETWEEN THE LIGHT FIXTURES AND MECHANICAL DUCTS OR EQUIPMENT FOR PROPER OPERATION, INSTALLATION AND/OR REMOVAL OF FIXTURES.
13. ALL CONDUIT SHALL BE ROUTED CONCEALED UNLESS NOTED ON PLAN OR ACCEPTED BY THE ARCHITECT.
14. PROVIDE ALL NECESSARY SLEEVES AND INSERTS FOR ALL WORK PASSING THROUGH OR ATTACHING TO WALLS, FLOORS, OR CEILINGS.
15. ALL WIRING SHALL BE INSTALLED IN RIGID METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CONDUITS INSTALLED CONCEALED IN WALL AND CEILING MAY BE EMT WITH STEEL COMPRESSION TYPE FITTINGS. PVC WHERE INSTALLED UNDERGROUND AND/OR UNDER SLAB. ALL EXPOSED CONDUITS SHALL BE RIGID STEEL CONDUITS WITH THREADED TYPE FITTINGS. INSTALL ALL CONDUITS IN ACCORDANCE WITH CECA STANDARDS OF INSTALLATION.
16. ELECTRICAL NON–METALLIC TUBING (ENT) AND MC CABLE ARE NOT PERMITTED TO BE USED FOR THIS PROJECT, NO EXCEPTIONS.
17. WHERE EXISTING CONDUITS, CONCEALED OR EXPOSED, AND (WIREMOLD) SURFACE RACEWAY IS NOT IN PLACE AS SHOWN ON PLANS, PROVIDE NEW CONDUITS AND (WIREMOLD) SURFACE RACEWAY FOR THE NEW WORK. VERIFY EXISTING CONDITION ON SITE AND PROVIDE ALL NECESSARY NEW MATERIAL, APPARATUS, AND WORK THAT ARE REQUIRED TO BE INCLUDED IN THE BID PACKAGE.
18. CONDUCTORS, #8 AND LARGER, SHALL BE STRANDED COPPER WITH THNN/THWN INSULATION, UNLESS OTHERWISE NOTED.
19. PROVIDE WORKING CLEARANCE PER CEC 110.26 FOR SERVICE PANEL, SUBPANELS, MOTOR DISCONNECT SWITCHES, CONTROL SECTIONS. HVAC EQUIPMENT, APPLIANCES, ETC.
20. PROVIDE A WARNING LABEL (SIGN) CLEARLY VISIBLE TO QUALIFIED PERSONS TO COMPLY WITH NEC AND CEC 116.16 OF POTENTIAL ELECTRIC ARC FLASH HAZARDS AT SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER CEC SECTION 110.24(A).
21. BUILDING SERVICE AND SUBPANELS TO COMPLY WITH CEC 110.9 AND 110.10 INTERRUPTING RATING AND BRACING. PROVIDE A.I.C. CALCULATIONS FOR SUBPANELS IF INTERRUPTING RATING TO BE USED IS LOWER THAN MAIN SERVICE RATING.
22. ALL APPLIANCES SHALL COMPLY WITH CEC ARTICLE 422. APPLIANCE CONTROL AND PROTECTION PER CEC 422–III; BRANCH CIRCUITS PER 422–II.
23. BUILDING EXPANSION JOINTS MAY OR MAY NOT BE INDICATED ON THE ELECTRICAL DRAWINGS. VERIFY THE LOCATIONS OF ALL APPLICABLE BUILDING EXPANSION JOINTS WITH THE ARCHITECTURAL DRAWINGS. WIRING METHODS ACROSS EXPANSIONS JOINTS SHALL INCLUDE USE OF FLEXIBLE FITTINGS OR OTHER DEVICES AS APPROPRIATE TO EACH APPLICATION. IN NO CASE SHALL CONDUIT CROSS SUCH A JOINT IN BUILDING CONSTRUCTION WITHOUT USE OF THE APPROPRIATE WIRING METHODS.
24. CONTRACTOR SHALL SIZE ALL THE INTERIOR AND EXTERIOR BUILDING PULL BOXES AND UNDERGROUND PULL BOXES PER CEC 314.16 AND COMPLY WITH CEC 314.28 FOR INSTALLATION OF RACEWAYS AND WIRING AS REQUIRED BY CODE, UNLESS OTHERWISE NOTED.
25. WHERE ACCESSIBILITY IS NOT AVAILABLE TO ELECTRICAL OUTLETS, DEVICES AND/OR EQUIPMENT, COORDINATE WITH THE ARCHITECT FOR PROVISIONS TO PROVIDE ACCESSIBILITY TO THEM.
26. CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL DRAWINGS AND PROVIDES ALL CONDUITS AND CONTROL WIRING AND POWER WIRING SHOWN ON THE MECHANICAL DRAWINGS THAT IS NOT SHOWN ON THE ELECTRICAL PLANS.
27. CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS AND COORDINATE FOR THE EQUIPMENT LOCATIONS. COORDINATE ROOF PENETRATION WITH THE MECHANICAL CONTRACTOR FOR MECHANICAL CONNECTIONS. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURBS WHERE POSSIBLE. VERIFY ON–SITE.
28. PROVIDE CONVENIENCE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT PER U.M.C. WHERE LOCATED OUTSIDE, PROVIDE WEATHER PROOF AND GFCI CONVENIENCE OUTLET. SECURE ROOF MOUNTED OUTLET TO THE MECHANICAL EQUIPMENT. VERIFY LOCATION IN FIELD WITH THE MECHANICAL CONTRACTOR.
29. VERIFY SINGLE–POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON–SITE PRIOR TO ELECTRICAL ROUGH–IN. PROVIDE DUAL DISCONNECTS IF TWO–POINT CONNECTIONS ARE REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
30. SWITCH DEVICES CONTROLLING MECHANICAL EQUIPMENT SHALL BE SIZE AND TYPE REQUIRED AND SHALL BE SERVED WITH QUANTITY OF WIRES AS REQUIRED. REFER TO DIVISION 23 MECHANICAL PLANS AND SPECIFICATIONS.
31. COORDINATE THE HVAC EQUIPMENT FOR FUSES REQUIRE. WHERE FUSES ARE REQUIRED, VERIFY FUSE SIZE ON–SITE AND PROVIDE FOR HVAC EQUIPMENT PER UNIT NAMEPLATE SPECIFICATIONS.
32. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430–IX AND 440.II.
33. MOTOR STARTERS FOR HVAC EQUIPMENT ARE PROVIDED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
34. ALL CONNECTIONS FROM THE DISCONNECT SWITCHES TO HVAC UNITS SHALL BE COPPER CONDUCTORS. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430–VII, 430–VIII, AND 440–II.
35. VERIFY LOCATION AND HEIGHT OF ALL MECHANICAL OR FIXTURE EQUIPMENT OUTLETS WITH SUPPLIER PRIOR TO ANY ROUGH–IN WORK. PROVIDE ALL RUNS AND CONNECTIONS TO EQUIPMENT.
36. ALL TERMINATION PROVISIONS OF EQUIPMENT, INCLUDING CIRCUITS RATED 100 AMPERES OR LESS, SHALL BE RATED AT 60 DEGREE, CENTIGRADE PER CEC 110.14(c).
37. ALL CONDUITS SHALL BE CONCEALED BELOW SLAB, IN WALLS AND/OR ABOVE CEILINGS EXCEPT IN ELECTRICAL ROOMS, MECHANICAL ROOMS, AND OTHER SIMILAR UTILITY ROOMS AS APPROVED BY THE ARCHITECT. NO CONDUIT SHALL BE EXPOSED ON EXTERIOR BUILDING SURFACES WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.
38. PROVIDE A CODE SIZED GROUND CONDUCTOR IN ALL CONDUITS WHETHER INDICATED ON PLANS OR NOT.

ELECTRICAL ABBREVIATIONS

SYMBOL	DESCRIPTIONS
AC	ABOVE COUNTER
AF	AMPERE FRAME OR FUSE
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFS	AUTOMATIC FIRE SPRINKLER
AIC	AMPS INTERRUPTING CAPACITY RATING
AMP, A	AMPERES
APPR	APPROVED
AS	AMPERE SWITCH RATING
AT	AMPERE TRIP RATING OF BREAKER
AUTO	AUTOMATIC
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BFC	BELOW FINISHED CEILING
BMS	BUILDING MANAGEMENT SYSTEM
BKR	BREAKER
C	CONDUIT
cd	CANDELA
CEC	CALIFORNIA ELECTRICAL CODE
CFL	COMPACT FLUORESCENT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CNTRL	CONTROL
CO	CONDUIT ONLY w/PULL STRING
CSFM	CALIFORNIA STATE FIRE MARSHALL
CT	CURRENT TRANSFORMER
CU	COPPER
CWP	COLD WATER PIPE
DEF	DEFROST
DISC	DISCONNECT
DIST	DISTRIBUTION
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EDF	ELECTRIC DRINKING FOUNTAIN
EL	EVENING LIGHT
ELEV	ELEVATION
EM	EMERGENCY LIGHT
EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE RESISTOR
EP	EMERGENCY POWER
EQPT	EQUIPMENT
EXH	EXHAUST
(E)	EXISTING
(ED)	EXISTING TO BE DEMOLISHED
(F)	FUTURE
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FF	FINISHED FLOOR
FG	FINISHED GRADE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
GFCI	GROUND FAULT CURRENT INTERRUPTER
GND	GROUND
HP	HORSE POWER
HZ	HERTZ
IG	ISOLATED GROUND
INC	INCANDESCENT
ISC	SHORT CIRCUIT CURRENT
ISOL	ISOLATED
JBOX	JUNCTION BOX
kcmil	THOUSAND CIRCULAR MILS
kV	KILOVOLTS
kW	KILOWATTS
kVA	KILOVOLT AMPERES
LT, LTS	LIGHT, LIGHTS
LTG	LIGHTING
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MLO	MAIN LUG ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPOE	MAIN POINT OF ENTRY
MS	MOTION SENSOR
MSB	MAIN SWITCHBOARD
MT	CONDUIT ONLY w/PULL STRING
MTD	MOUNTED
(N)	NEW
NEMA	NATIONAL ELECTRIC MANUFACTURER ASSOCIATION
NIES	NOT IN ELECTRICAL SECTION OF THESE PLANS & SPECIFICATIONS
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
NT	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD
PH, P	PHASE OR POLE
PB	PULLBOX
PFB	PROVIDE FOR FUTURE BREAKER
PIV	POST INDICATOR VALVE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
(R)	RELOCATED
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REQD	REQUIRED
RGSC	RIGID GALVANIZED STEEL CONDUIT
SHLD	SHIELDED
SHT	SHEET
SPD	SURGE PROTECTION DEVICE
SPECS	SPECIFICATIONS
SW	SWITCH
SYM	SYMMETRICAL
TEMP	TEMPERATURE
TOF	TIMED OFF DELAY
TS	TAMPER SWITCH
TSTAT	THERMOSTAT
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UGPS	UNDERGROUND PULL SECTION
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
V	VOLTS
VL	VERIFY LOCATION
W	WATTS
w/	WITH
WP	WEATHERPROOF
WPL	WEATHERPROOF LOCKING
WPU	WEATHERPROOF WHILE IN USE
(X)	REMOVE
XFMR	TRANSFORMER

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE
E0.0.1	ELECTRICAL SYMBOL LEGEND,NOTES & ABBREVIATIONS
E0.0.2	ELECTRICAL DETAILS
E2.0.1D	ELECTRICAL DEMO OVERALL ROOF PLAN
E6.4.1	ELECTRICAL ENLARGED FLOOR PLAN
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES
E2.0.1	ELECTRICAL OVERALL ROOF PLAN

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Drawing Title
ELECTRICAL SYMBOL LEGEND,NOTES & ABBREVIATIONS

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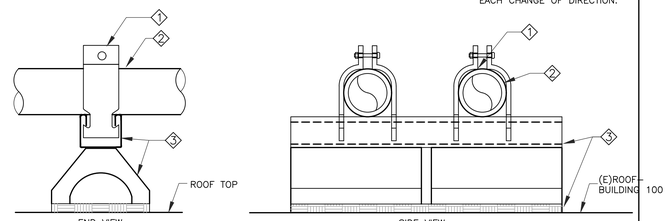
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KEY NOTES:

1. HOT-DIPPED GALVANIZED UNISTRUT CONDUIT CLAMP. SIZE AS REQUIRED.
2. CONDUIT AS NOTED ON DRAWINGS.
3. ROOFTOP SUPPORT BASE, B-LINE C6 SERIES WITH HOT-DIPPED GALVANIZED B12 CHANNEL. SECURE TO ROOF WITH A FULL BED OF NON-HARDENING ADHESIVE TYPE MASTIC.

NOTE:
INSTALL SUPPORT BLOCK 8'-0" O.C. MAX. WITHIN 36" OF A BOX CONNECTION, AND AT EACH CHANGE OF DIRECTION.

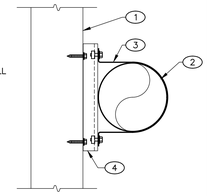


ROOF CONDUIT LOW SUPPORT DETAIL — NTS — 1

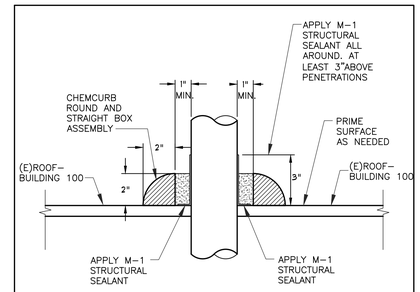
KEY NOTES:

1. WOOD FRAMED WALL.
2. CONDUIT, SEE PLAN FOR SIZE.
3. "B-LINE" B3180 SERIES PIPE CLAMP. ATTACH TO CHANNEL W/ CHANNEL NUT AND WASHER.
4. "B-LINE" B22 CHANNEL, MIN 12" LONG. ATTACH TO WOOD STUD WALL W/ #10 WOOD SCREWS x 1-1/2" EMBEDMENT, AT 8" O.C.

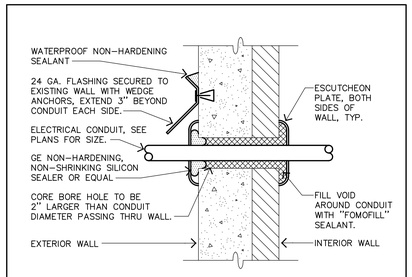
NOTE:
ALL SUPPORTS TO BE MAX 10 FT ON CENTER AND MAX 3 FT FROM ALL CONDUIT TERMINATIONS WHERE OCCURS



CONDUIT MOUNTING DETAIL - WOOD WALL — NTS — 4



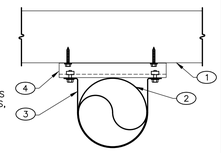
CONDUIT PENETRATION CROSS SECTION — NTS — 2



CONDUIT WALL PENETRATION DETAIL — NTS — 5

KEY NOTES:

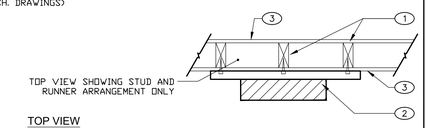
1. WOOD FRAMED COVER WALKWAY.
2. CONDUIT, SEE PLAN FOR NUMBER AND SIZE.
3. "B-LINE" B3180 SERIES PIPE CLAMP. ATTACH TO CHANNEL W/ CHANNEL NUT AND WASER.
4. "B-LINE" B22 CHANNEL, LENGTH AS NEEDED FOR NUMBER OF CONDUITS, MIN 12" LONG. ATTACH TO WOOD JOIST W/ (2) 5/8"ø LAG BOLTS, MIN 3-1/2" EMBEDMENT., AT 8" O.C.



UNDER CANOPY CONDUIT MOUNTING DETAIL — NTS — 6

KEY NOTES:

1. WOOD STUD EXISTING
2. SURFACE MOUNTED PANEL CABINET (SEE NOTE A FOR PANEL WEIGHT)
3. EXISTING SHEET ROCK OR OTHER WALL SURFACE MATERIAL (SEE ARCH. DRAWINGS)



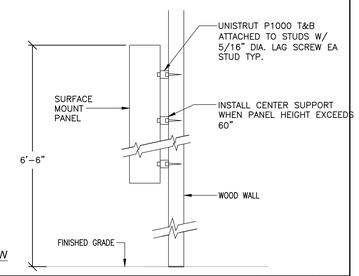
TOP VIEW

NOTES:

A. PANEL WEIGHT:
REGULAR: 150 LBS.
LARGE: 250LBS. MAX

B. REFER TO PANEL SCHEDULE SHEET FOR SIZES OF PANELS.

C. CENTER OF GRAVITY OF CABINET FROM TOP OF FLOOR = ±50".



SIDE VIEW

SURFACE PANELBOARD/CABINET WOOD FRAMING MOUNTING DETAIL — NTS — 3

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HVAC & ROOF UPGRADES

Drawing Title
ELECTRICAL DETAILS

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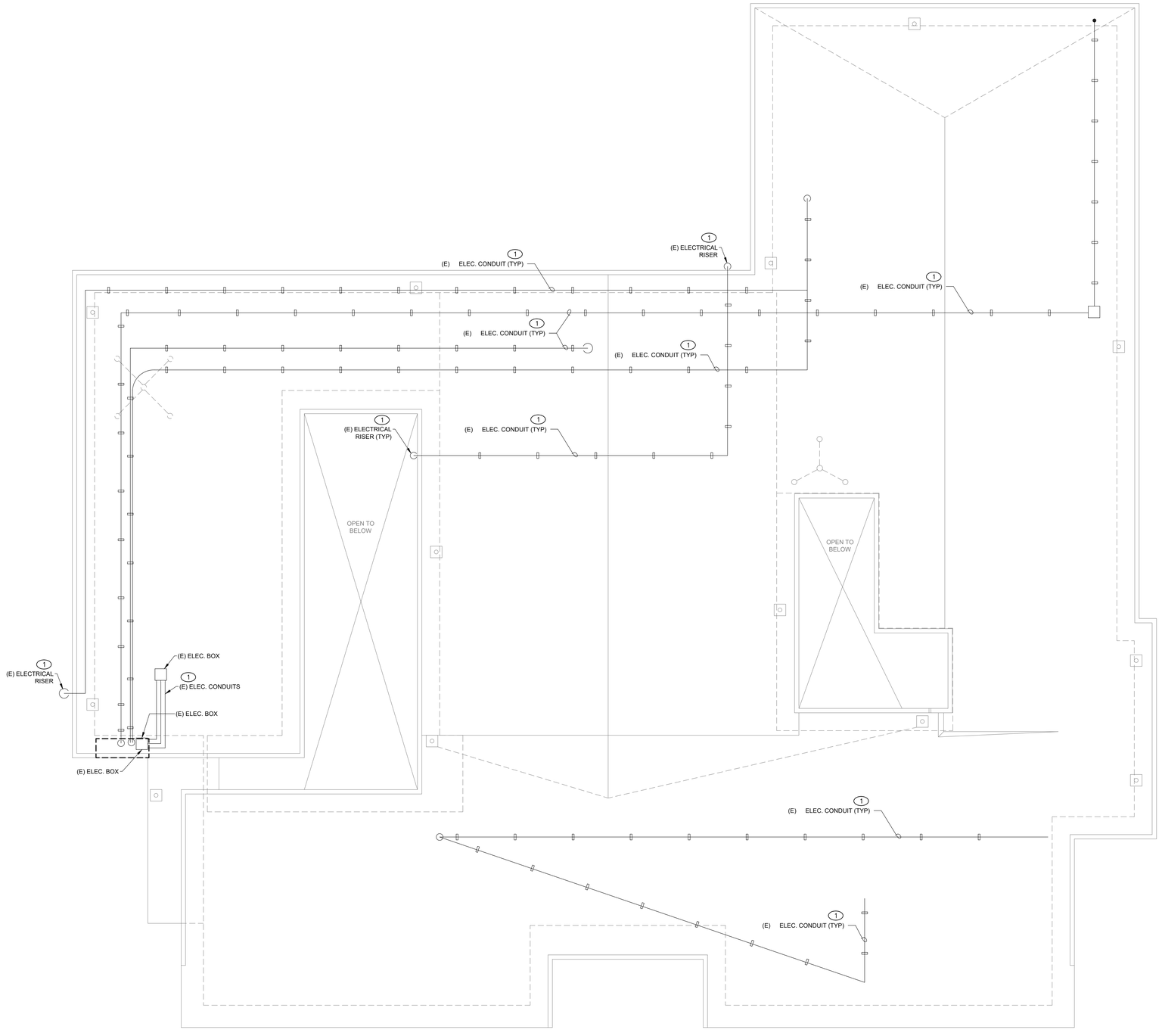
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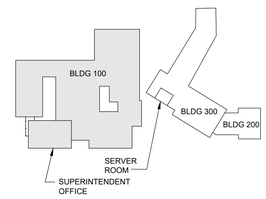
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KEY NOTES

1. (E) ELECTRICAL CONDUIT AND CONDUCTORS TO BE REMOVED DURING THE REROOFING WORK. SAFE AND PROTECT THE CONDUITS AND CONDUCTORS AND RE-INSTALL AFTER REROOFING WORK.



1 ELECTRICAL DEMO OVERALL ROOF PLAN
1/8" = 1'-0"



KEY PLAN

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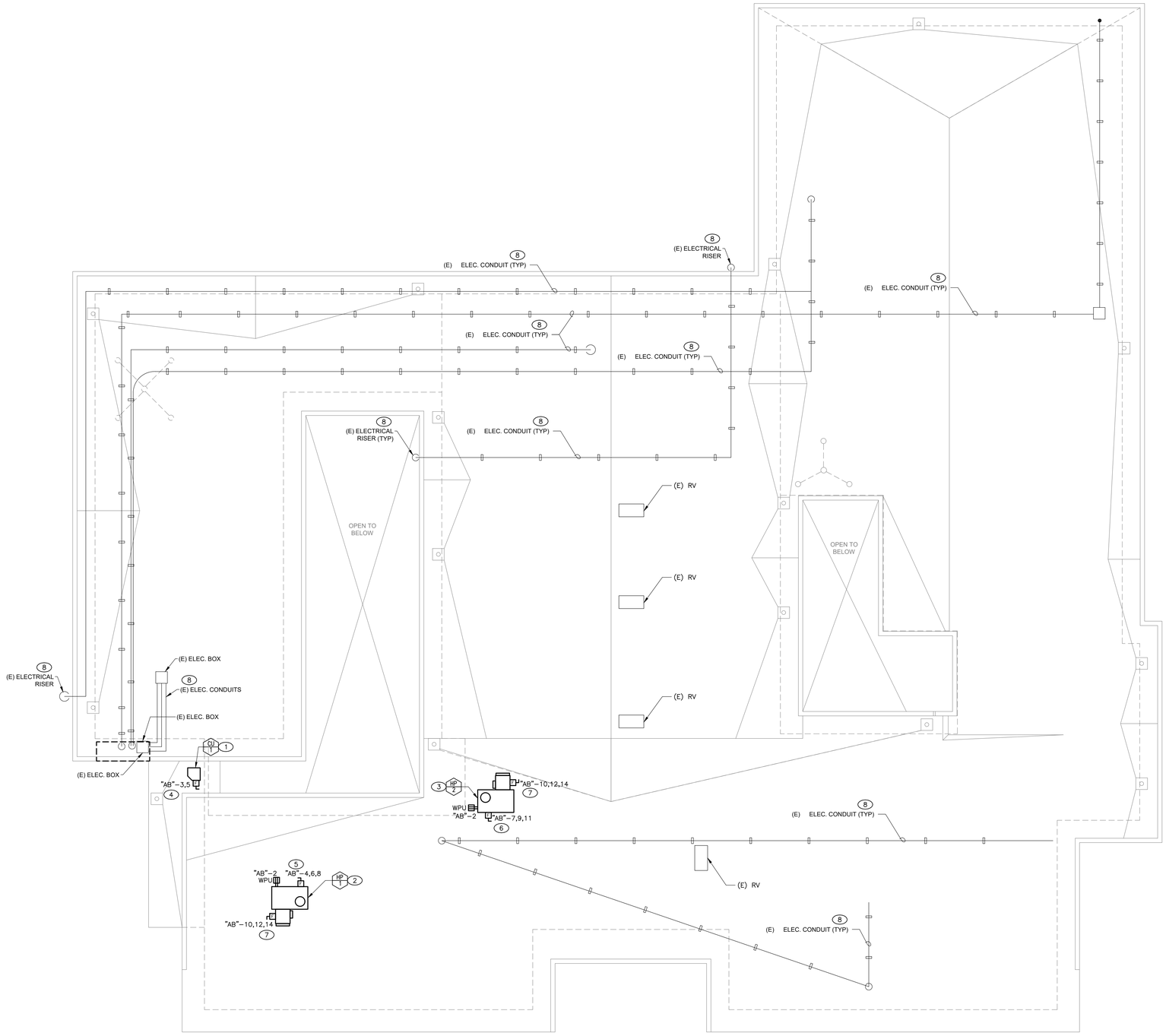
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ELECTRICAL DEMO OVERALL ROOF PLAN

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1 ELECTRICAL OVERALL ROOF PLAN
1/8" = 1'-0"

TRUE NORTH

PROJECT NORTH

GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO STARTING ANY WORK. SHOULD ANY DISCREPANCY EXIST, CONTRACTOR SHALL NOTIFY ENGINEER AND SCHOOL DISTRICT REPRESENTATIVE.

B. ALL NEW EXPOSED CONDUITS IN A SCOPE OF WORK SHALL BE IMC TYPE WITH THREADED CONNECTORS AND FITTINGS.

C. EACH NEW DISCONNECT SWITCH SHALL BE PERMANENTLY MARKED WITH CORRESPONDING CIRCUIT NUMBER SERVING THAT UNIT.

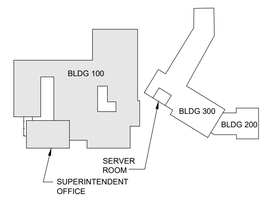
D. IN INSTANCES WHERE MORE THAN 3 CURRENT–CARRYING CONDUCTORS SHARE A COMMON RACEWAY CONDUCTOR AMPACITIES SHALL BE ADJUSTED IN ACCORDANCE WITH CEC 310.15(B)(3)(a) AND 310.15(B)(2)(a).

E. CONTRACTOR SHALL UPDATE ELECTRICAL PANELBOARD DIRECTORIES TO REFLECT ANY CHANGES MADE TO A CIRCUIT ARRANGEMENT.

F. RECEPTACLES OF 15 AND 20 AMPERES, 125 AND 250 VOLTS INSTALLED IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHETHER OR NOT THE ATTACHMENT PLUG CAP IS INSERTED. AN OUTLET BOX HOOD INSTALLED FOR THIS PURPOSE SHALL BE LISTED AND SHALL BE IDENTIFIED AS "EXTRA–DUTY" PER CEC 406.9(B)(1).

(#) KEY NOTES

1. CU: 208V/1PH, 10.9 FLA, 14.2 MCA, 20 MOCP. PROVIDE 20AF/2P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
2. ROOFTOP HP–1: 208V/3PH, 37 FLA, 39 MCA, 50 MOCP AND POWERED EXHAUST; 208V/3PH, 2.2 RLA, 2.75 MCA, 4.95 MOCP. PROVIDE 50AF/3P/60AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR AC POWER AND 15AF/3P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR POWER EXHAUST.
3. ROOFTOP HP–2: 208V/3PH, 29 FLA, 31 MCA, 35 MOCP AND POWERED EXHAUST; 208V/3PH, 2.2 RLA, 2.75 MCA, 4.95 MOCP. PROVIDE 40AF/3P/60AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR AC POWER AND 15AF/3P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR POWER EXHAUST.
4. PROVIDE 3/4"C – 2#10 CU + 1#10 CU GND.
5. PROVIDE 1"C – 3#6 CU + 1#10 CU GND.
6. PROVIDE 3¼"C – 3#8 CU + 1#10 CU GND.
7. PROVIDE 3/4"C – 3#10 CU + 1#10 CU GND.
8. REINSTALL REMOVED (E) ELECTRICAL CONDUIT AND CONDUCTORS. RECONNECT ALL FEEDERS AND BRANCH CIRCUITS AS COMPLETE AND OPERABLE SYSTEM.



KEY PLAN

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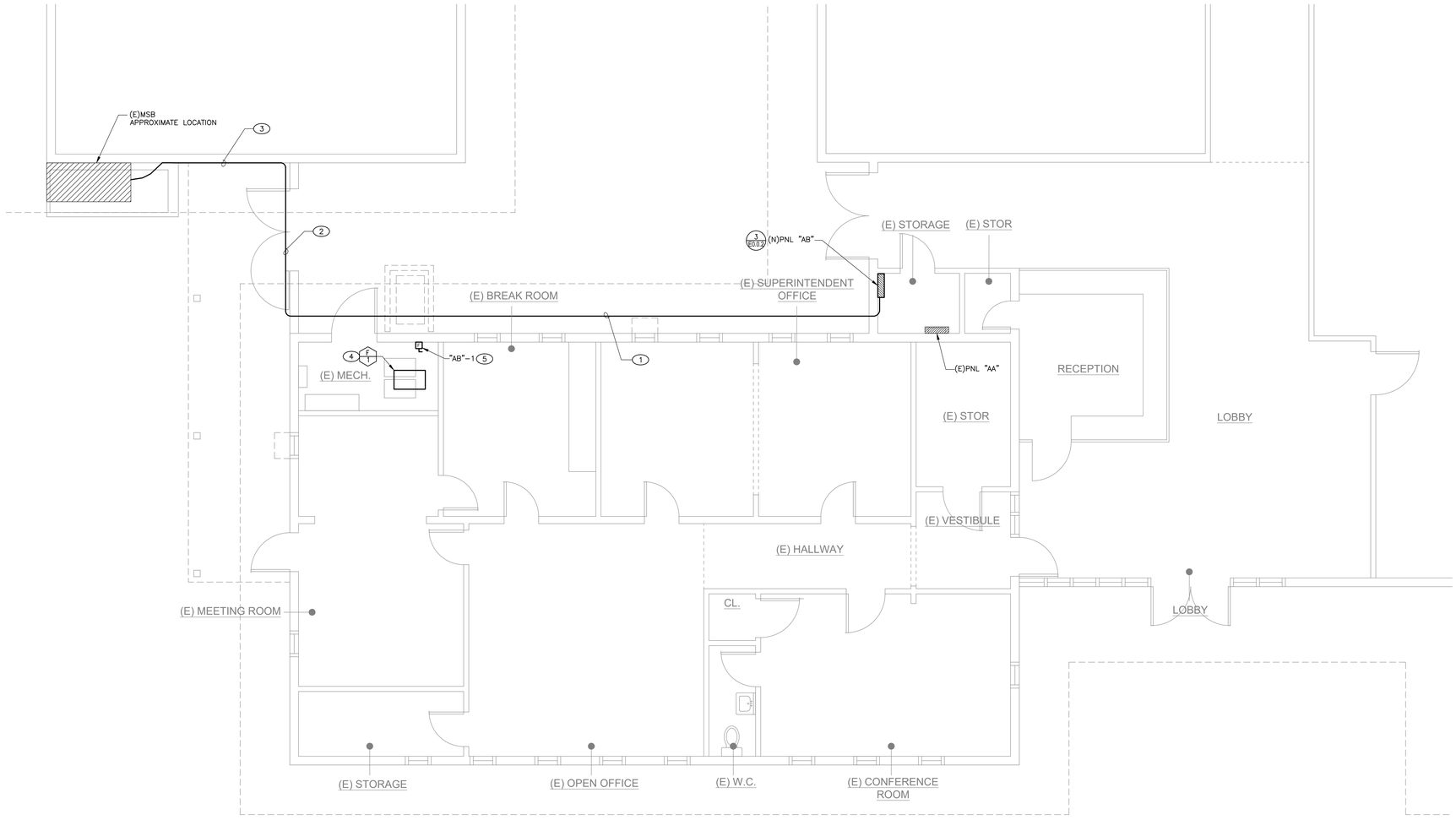
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ELECTRICAL OVERALL ROOF PLAN

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1 ELECTRICAL ENLARGED FLOOR PLAN
1/4" = 1'-0"

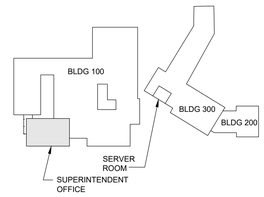
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GENERAL NOTES

A. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORKS, AND REPORT TO ENGINEERS ANY DISCREPANCIES.

KEY NOTES

1. INSTALL CONDUITS UNDERSIDE OF (E) ROOF. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 6/E0.0.2.
2. INSTALL CONDUITS ON (E) WALL. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 4/E0.0.2.
3. INSTALL CONDUITS ABOVE (E) COVERED WALKWAY ROOF. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 1/E0.0.2.
4. F: 115V/1PH, 8.8 FLA, 14.2 MCA, 15 MOCP. PROVIDE 15AF/1P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
5. PROVIDE 3/4"C – 3#12 CU + 1#12 CU GND



KEY PLAN

100% SD REVIEW SET

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Exp. 08/30/24
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STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOF UPGRADES

Drawing Title
ELECTRICAL ENLARGED FLOOR PLAN

NO.	DATE	ISSUE

Drawn By
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Project No.
23-525
©Date
01/05/2024
Drawing No.
E6.4.1

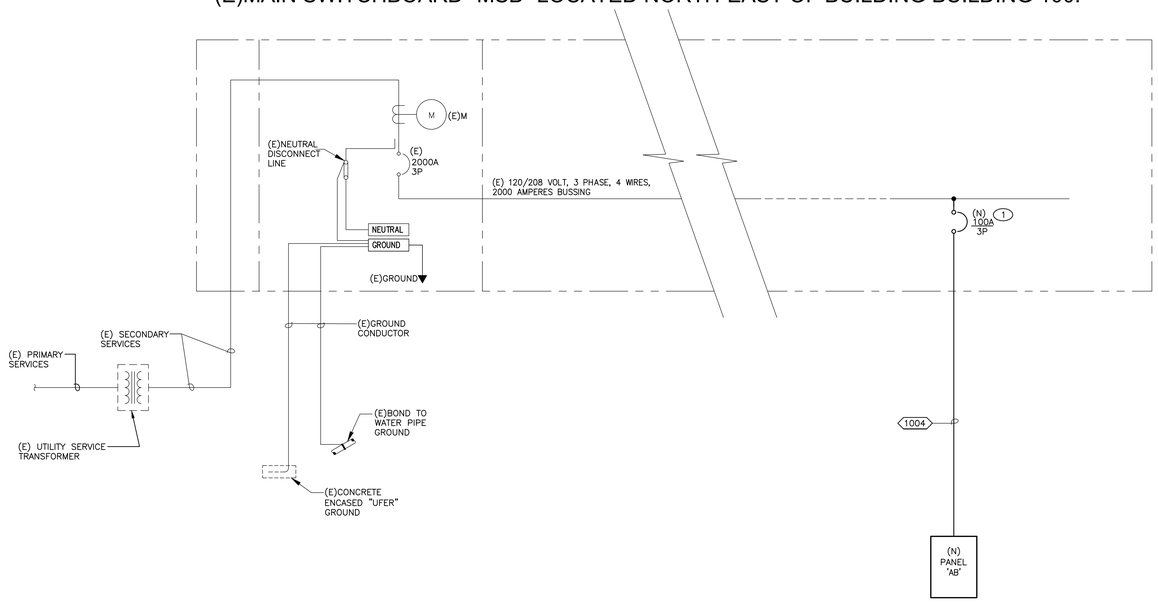
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GENERAL NOTES

A. PROVIDE ALL NECESSARY AUXILIARY EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

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(E)MAIN SWITCHBOARD "MSB" LOCATED NORTH-EAST OF BUILDING BUILDING 100.



KEY NOTES

1. PROVIDE NEW CIRCUIT BREAKERS INSIDE THE (E) MAIN SWITCHBOARD "MSB" FOR (N) PANEL "AB" MATCH THE (E) AIC. RATING.

FEEDERS SCHEDULE		
TAG	RATING	CONDUIT/CONDUCTOR
1004	100A/3P/3W	(1) 2" C - 4 # 1 CU + 1 # 8 CU GND.

PANEL "AB"

120/208 Volt, 3 Phase, 4 Wire
100 Amp BUS CU.
100 Amp MCB
Amp MLO

FEED FROM MSB at BLDG 1
22,000 AIC
SURFACE MOUNT

			PHASE SUMMARY (WATTS)								
CKT	BKR	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	BKR	CKT
1	20/1	FURNACE UNIT/F	1,056			360			RECEPT	20/1	2
3	20/2	CU-1		1,134			4,443		HP-1	50/3	4
5	-	-			1,134			4,443	-	-	6
7	40/3	HP-2	3,482			4,443			-	-	8
9	-	-		3,482			264		PE/HP-1	15/3	10
11	-	-			3,482			264	-	-	12
13	15/3	PE/HP-2	264			264			-	-	14
15	-	-		264					SPARE	20/1	16
17	-	-			264				SPARE	20/1	18
19	20/1	SPARE							SPARE	20/1	20
21	20/1	SPARE							SPARE	20/1	22
23	20/1	SPARE							SPACE	PFB	24
25	PFB	SPACE							SPACE	PFB	26
27	PFB	SPACE							SPACE	PFB	28
29	PFB	SPACE							SPACE	PFB	30

PHASE TOTALS		
A	B	C
9,869	9,587	9,587

PANEL AND CIRCUIT BREAKER NOTES:
[1] PROVIDE NEW CIRCUIT BREAKER IN SPACES FOR NEW CIRCUITS. PROVIDE THE CORRECT SIZE AS SHOW. REPLACE THE EXISTING AS SHOWN/REQUIRED. MATCH THE EXISTING A.I.C RATING

DEMAND LOADS	
LIGHTING / CONTINUOUS LOAD x 125%	Watts
RECEPTACLES / OTHER x 100%	29,043 Watts
LARGEST MOTOR x 25%	1,111 Watts
TOTAL DEMAND LOADS	30,154 Watts
TOTAL DEMAND AMPS	84 AMPS

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NOT FOR CONSTRUCTION

Project
ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawing Title
ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES

Drawn By

Checked By

NO.	DATE	ISSUE

Project No.
23-525

Date
01/03/2024

Drawing No.
E6.4.2

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